

COAL AGE

Volume 16

New York, September 25, 1919

Number 13

Our Problems and Theirs

BY R. DAWSON HALL



EUROPE'S difficulties arise largely from the number of the idle rich and the numberless passably well-to-do who are well content to live on their small incomes. This idleness embraces a far larger proportion of the population in Europe than in the United States, where men of no occupation are in general restricted to the "hobo" class. In Europe profits are not unusually high. It is not the size of these profits, but the use that is made of them that is the cause of many of the ills of that continent.

If the profit of industry is returned to industry, if it is expended judiciously in perfecting the engineery of production, then that profit assists in adding to human wealth and human happiness. Many are the capitalists who spend a meager one or two per cent. of the large incomes they receive from industry, while five or perhaps ten per cent. more is lost in unprofitable business ventures. This latter loss is unfortunate to them and to us, but it is inevitable. One cannot always foretell just where money will be profitably invested. The waste in Government construction is immensely larger. Look, for instance, at our public roads worn out in a short span of years, and the Erie Canal, which has never earned a dividend.

All the other profit of the man with capital goes into the development of the Nation's resources. It appears as houses, railroads, factories and equipment. It forges the implements of progress. Without it we should stand still and live as in past centuries. That part of the profits of industry that is private profit, in the sense of being expended for personal comfort or pleasure, is small; and the percentage decreases with the aggregate size of the profit taker. The really large holders of stocks convert little of what they receive to their own uses, while the small holders, unless wage earners, so convert nearly all.

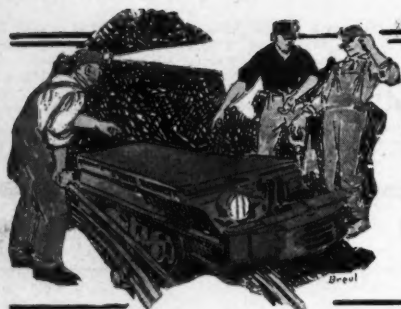
Unfortunately, in Europe the rich and a large part of the middle class, especially the women, are non-producers. For the most part they expend on themselves all that they make. If they fail to do so, they are somewhat freely condemned by the working

classes, who believe that expenditures of all kinds are good for trade and therefore for labor.

The workers rejoice when property is destroyed, as by a fire or a flood, provided the catastrophe does not lay off men. They argue that it will take hours of labor to replace the property destroyed. There is more excuse for this reasoning in Europe than here, for what is not expended in Europe for replacement is quite apt to be paid out for luxury; but it is not so in the United States, for the cost of rebuilding would merely be deducted from the expenditure to be bestowed on some entirely new construction that would expand industry.

A belief exists in Europe among those who have wealth that trade is the natural function of one of lower intelligence, subjecting the man who enters into it to all manner of disconcerting contingencies and commandeering one's whole attention and service. Yet more it is the general thought that to take anything with seriousness, to put one's whole effort into anything, is a trifle plebeian. A reserve of energy, the European declares, should always mark a man of distinction. The strength of his hand, the brilliance of his brain and even the depth of his emotions must be hidden. He looks with disapproval at the American who says he seeks "results." The European gentleman does not want results; to him they are at best vulgar things. The war has shaken his assurance as to that matter, but he is still only in doubt.

The European trouble is not in the division of profits. It is in the misuse of them. Let us beware of the time when our exuberance decays and we also lose our interest in industry as an ultimate end. Culture is a delightful goal to envision, but production is the only thing that can afford that material gratification that workingmen are today demanding. It is useless to talk of a "new day," a day of material satisfaction, as have the wealthy of Europe, unless we all, by our industry, are willing to work for it. When the people of the United States, both wealthy and humble, fail to do their part in the creation of wealth, the country must needs be impoverished regardless of the equality by which that wealth is distributed.



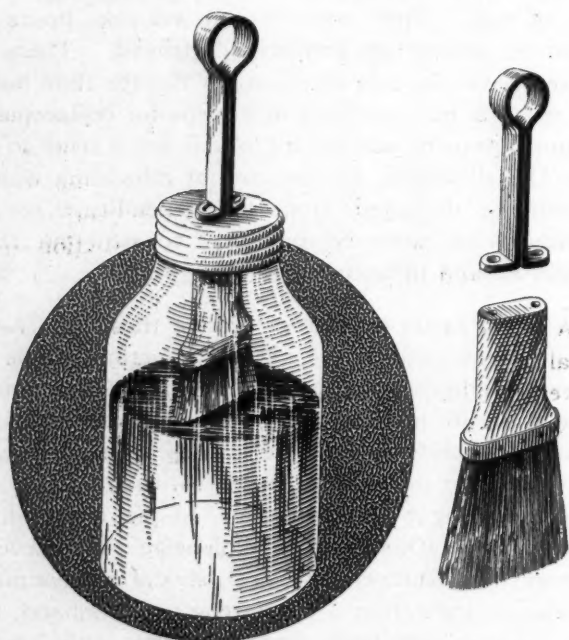
IDEAS AND SUGGESTIONS

PRACTICAL SCHEMES THAT MAKE THE DAY'S WORK EASIER

Handy Shellac Container

BY CHARLES H. WILLEY
Concord, N. H.

Users of shellac know that if the brush and the liquid are not kept in an air-tight vessel, the shellac will not only harden but the brush will be ruined as well. A cheap container for the shellac and the brush can be made from a zinc-cover screw-top Mason jar, as shown in the illustration. A flat brush is cut off near the



CONTAINER PRESERVES BOTH SHELLAC AND BRUSH

lower end of the handle, and a handle of $\frac{3}{8} \times \frac{1}{16}$ in. strap iron is bent into the shape shown. By means of wood screws the brush and handle are secured to the cover in the manner indicated. The container will be found to be perfectly air-tight.

Coupling Hooks for Slopes, Planes and Rope Haulages

Coal Age of Aug. 7 contains a diagram of a self-uncoupling hook for use in hoisting and haulage. The accompanying illustrations show three different types of hooks designed for this purpose and now in use in the anthracite and to some extent in the bituminous region, on main and tailrope haulages, also slopes and planes.

The hooks shown in Figs. 1 and 2 are used mainly on main and tailrope haulages. Fig. 3 is a hook almost universally used by several companies on slopes and planes.

The arrangement shown in Fig. 3 embodies a small clevice provided with a pin attached directly to a rope cone. The pin, however, is larger at the lower than at the upper end. The holes are so proportioned that the pin will lift out of the lower one but will not pass through the upper one. The chief advantage of this coupling lies in the ability of a triprider or headman to uncouple the trip at the head or foot while the trip is in motion whenever the engineer gives him a little slack, and his ability, especially at the head, to throw the rope easily to one side.

As soon as the engineer gives a little slack, the pin, which is then loose, is easily pulled up, the large end catches in the upper side of the clevice and the weight of the clevice and socket are then held by this large end



FIG. 1

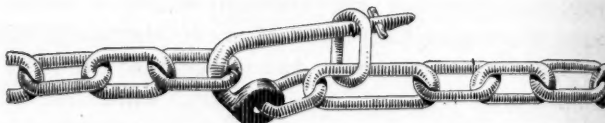


FIG. 2

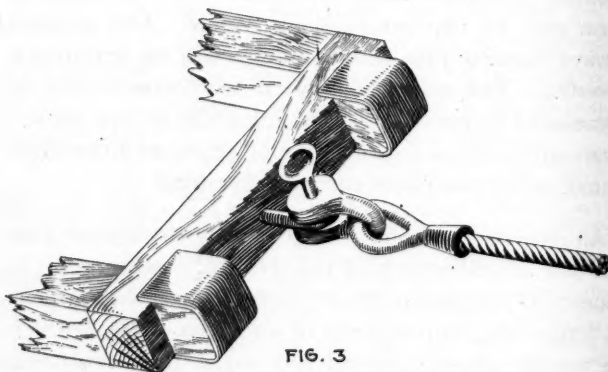


FIG. 3

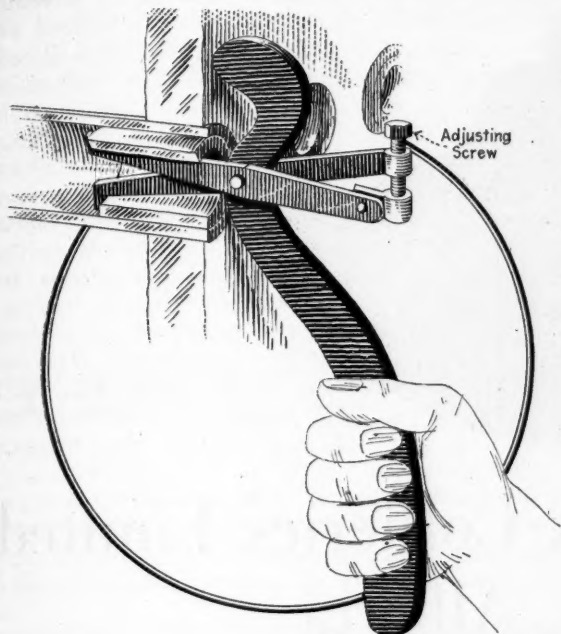
FIGS. 1 TO 3. DIFFERENT KINDS OF SELF-UNCOUPLING HOOKS FOR USE IN HOISTING AND HAULAGE

of the pin. Throwing this whole contrivance aside is a simple matter. This clevice should in all cases be attached to some stationary object on the car so that it cannot be upturned, as might be the case if it were attached to a chain. In this latter case, of course, the pin would drop out and the cars uncouple.

The operation of the hooks shown in Figs. 1 and 2 is self-explanatory. They are designed for use with chain connections where it is necessary to have an attachment that will remain secure in all positions, yet one that will permit easy and rapid disconnection at any point along the travel of the trip.

Boiler Ferrule Extractor

Some time ago I had occasion to renew a lot of ferrules on the fire ends of the boiler tubes in a battery of boilers. To expedite the work I made a ferrule



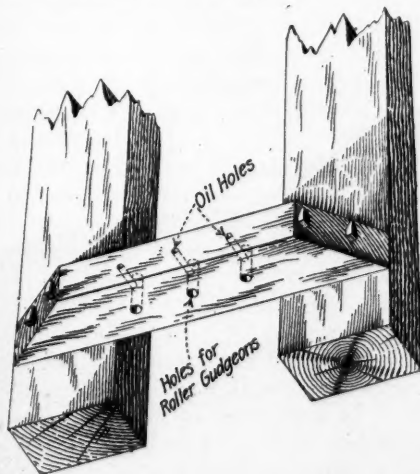
DETAILS OF A SIMPLE FERRULE EXTRACTOR

extractor from odd stock somewhat like the one shown in the illustration. The device is so simple to construct that it needs no elaborate description.

Three-in-One Roller Brackets

BY RALPH W. MAYER
California, Penn.

Rope haulageways are usually provided with wooden rollers, with a diameter of 6 or 8 in. These are placed between the track rails and carry the haulage rope, preventing excessive wear upon it. The rollers are provided with $\frac{1}{2}$ -in. gudgeons about 6 in. long extending



ROLLER BRACKET THAT DOES THE WORK OF THREE

from either end and upon which the roller turns. The roller is supported at either end by a bracket, made of wood and having a hole bored in it to act as a journal bearing for the roller. Oil holes are bored from the top

of the bracket to the bearing hole so that the roller may be lubricated.

The brackets are made from 6 x 4-in. timber and are long enough to reach across two adjoining ties. Each of their ends is sawed off diagonally, or beveled, and two holes bored in the beveled portion for spikes to fasten the bracket to the ties. Usually, as soon as the bearing in the wooden bracket becomes worn, the roller will not turn and the bracket has to be replaced.

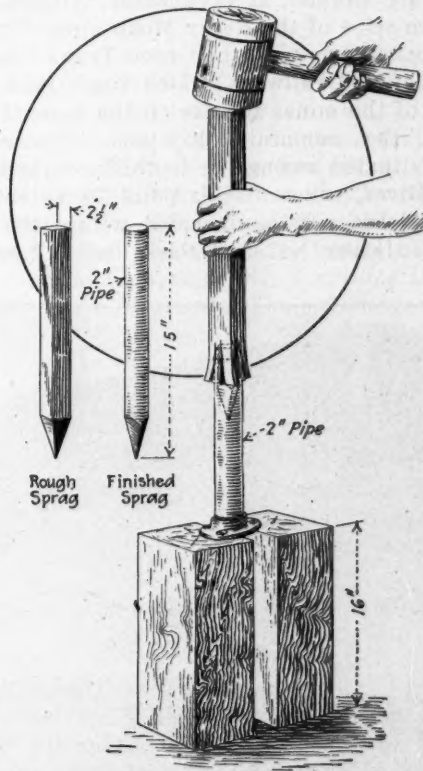
One large mining company has made one bracket do as much work and last as long as three did by the old method. It adopted the extremely simple expedient of making three holes, or bearings, for the roller in each bracket instead of the single bearing formerly provided. As soon as one of the holes, or bearings, becomes worn out the roller is shifted to the second bearing, and when this is too badly worn the roller is again shifted to the third bearing. This is the work of but a few minutes for the trackwalker when he oils the rollers. It saves much time in replacing brackets and cuts the cost of new brackets to one third of the former amount.

A Simple Sprag Cutter

BY W. E. GULLER
Panama, Ill.

At many mines sprags are still made with a hatchet. The accompanying diagram shows a simple device by the aid of which sprags may be fashioned much faster and more easily.

The illustration is self-explanatory and needs no ex-



SIMPLIFIES THE MAKING OF SPRAGS

planation. Any diameter or length of pipe desired may of course be used. The height of the wooden block should be at least 1 in. greater than the length of sprag to be formed, so as to permit the easy removal of the sprag after it has been driven through the pipe.



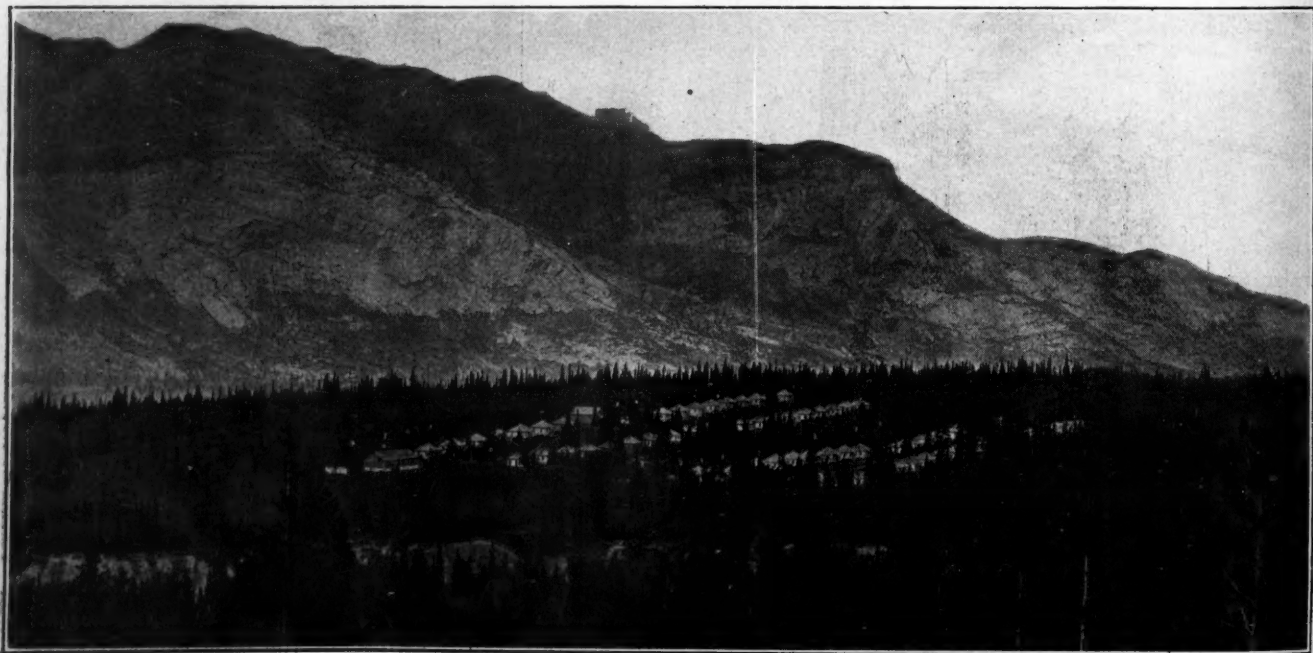
Roche Miette Mountain, elevation 7500 ft., immediately west of No. 2 tunnel of Jasper Park Collieries. Shows excessive erosion.

Mines of the Jasper Park Collieries, Limited, at Pocahontas, Alberta

BY J. H. McMILLAN
Pocahontas, Alta.

THE chief mines of the Jasper Park Collieries, Ltd., are situated at Pocahontas, Alberta, on the eastern slope of the Rocky Mountains. They have main-line connections with the Grand Trunk Pacific and Canadian National railways, which roads take the entire output of the mines for use on the locomotives operating on the mountain divisions. The camp is beautifully situated among the foothills overlooking the Athabasca River, which at this point forms itself into a series of lakes. Being included within the boundaries of the Jasper National Park, the authorities in

charge of the park make it compulsory that the grounds adjacent to the mine and camp be kept free from objectionable accumulations, and as mines go, the general surface conditions might be considered exceptionally good. The coal field is most interesting and presents many and varied obstacles which are not at all common to coal mines of western Canada, with the exception of those in the Crows Nest Pass district. The rock formations of the Jasper and Crows Nest Pass coal fields have much in common; the Jasper district, however, has been subjected to much more and severe fault-



VIEW OF THE TOWNSITE, JASPER PARK COLLIERIES, LTD., ROCKY MOUNTAINS IN BACKGROUND

ing with the result that mining conditions are anything but favorable.

The rock formation adjacent to the Jasper Park collieries is complex, and within comparatively short distances it is possible to identify strata ranging from the Devonian measures through to the Recent. The consolidated rocks, all of which were deposited previous to the great intrusion that produced what is now known as the Rocky Mountains, consist of a series of beds lying unconformably on each other and ranging from the Devonian to the Upper Cretaceous, the latter being the coal-bearing measures. The Cretaceous formation, being comparatively soft in structure, has been almost entirely eroded from the higher ridges, which now consist chiefly of Devonian sandstones and dolomites. The coal field has been badly faulted, particularly to the east of the mines along the Fiddle Creek basin, where the Devonian sandstones make contact with the Upper Cretaceous shales. Considerable faulting has also occurred to the west, where the Cretaceous coal measures make contact with the Carboniferous shales, while a little further along on the higher ridges further west the Jurassic shales are to be seen lying immediately against the Devonian limestones. The coal-bearing strata at Pocahontas, measured from the conglomerate ridges forming the east and west arms of



MACHINE, BLACKSMITH AND CARPENTER SHOPS AT THE JASPER MINE

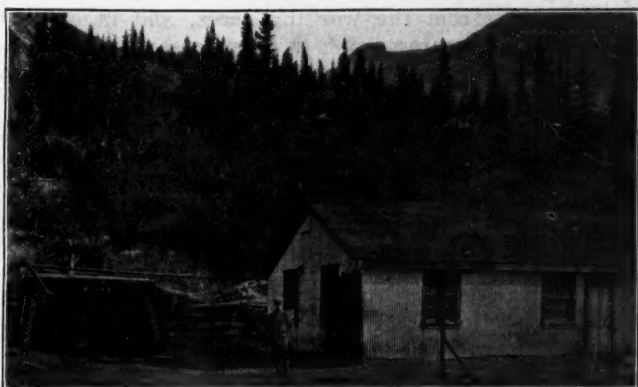
the anticline, are a little over 2000 ft. in thickness and contain five workable beds with an approximate total of 36 ft. of coal.

The anticline referred to runs in a southeasterly direction from Pocahontas and terminates at a point about 5 miles from the camp, where a heavy cross fracture running almost east and west completely cuts off the coal measures.

Beyond this point the strata are badly broken and no coal of any account has as yet been found. Erosion has completely carried away the coal-bearing measures of the Cretaceous period, and what coal has been found appears to belong to the Carboniferous.

Prospecting has been confined chiefly to the measures overlying the conglomerates. The measures below the conglomerates are cut in various places by mountain streams, but not sufficiently deep to determine whether or not commercial coal is to be found at depth. The management, however, is satisfied that workable beds exist below the conglomerates and several drill holes will be put down at various points on the property with a view to determining this point.

From a geologic standpoint this portion of Alberta might be termed a regular student's paradise. Every conceivable form of fault known to mining can be found, and the different strata clearly correlated. From an



PORTAL OF NO. 2 TUNNEL, JASPER MINE

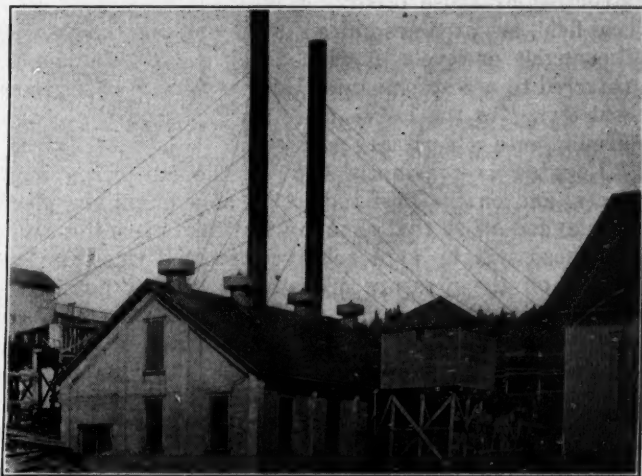
operating standpoint, however, the position of mine manager is one perpetual round of puzzles and worry.

The coal beds found on the property of the Jasper Park Collieries, Ltd., are of excellent quality, a series of samples taken from the outcrops having given the following contents:

No. 2 or Tunnel Seam:		Per Cent.
Moisture.....		99.99
Volatile.....		20.46
Fixed carbon.....		74.52
Ash.....		4.03
Total.....		100.00
6-ft. Seam, West of Tunnel:		
Moisture.....		1.65
Volatile.....		24.68
Fixed carbon.....		71.02
Ash.....		74.03
Total.....		100.00
No. 4 Seam:		
Moisture.....		1.34
Volatile.....		22.91
Fixed carbon.....		68.51
Ash.....		7.24
Total.....		100.00

These samples, together with others that have been taken from time to time, show fine coking qualities.

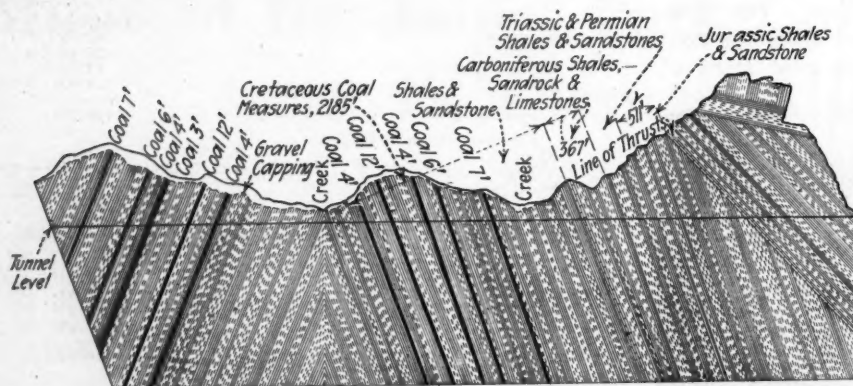
The majority of the beds so far located have no structure whatever. This combined with a heavy thrust from the footwall and severe outbursts of gas, make mining conditions anything but favorable and comparatively expensive considering the advantageous position of the seams. The average pitch is about 65 deg., though in places the measures assume all angles up to vertical. A series of local faults running diagonally across the pitch interferes greatly with the grades. These become more marked with depth. The coal falls



POWER PLANT OF THE JASPER MINE

by gravity from the working faces, and in order to maintain a running grade it is necessary, when these faults are encountered, to go back down the pitch and regrade. Owing to the absence of structure, it is impossible to mine direct on the full pitch, or to take out the entire bed between the hanging and foot walls. Accordingly, angles or stalls are driven diagonally across the pitch and only a small portion of the bed taken out in development, and this immediately against the hanging wall.

These angles are roughly of a right-angled triangle in cross-section, the upper or pitch side or rib being 6 ft. high, while the hanging wall and floor come to a point on the low side. The width of the angles is generally about 8 ft. On the upper levels, where the coal is inclined to be damp and consolidated, this method is somewhat modified and much more coal taken out during development. The maximum area of cross-section is about 48 sq. ft. on the upper-level angles. Owing to the friability of the coal in general, the angle system of mining is the only method by which the seam now being developed could be worked, and even under this



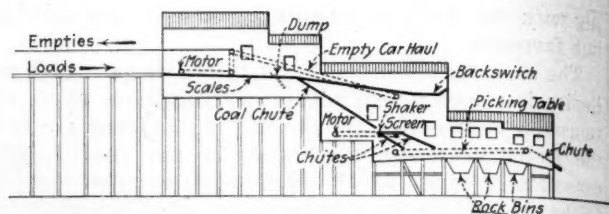
CROSS-SECTION OF STRATA, SHOWING FORMATION

system considerable difficulty is experienced in extending the development places owing to the excessive gas pressure from the footwall. This pressure is caused by a false footwall, varying from 3 to 10 ft. in thickness and containing a thin seam of coal which lies immediately against the main footwall rock, and which apparently holds considerable gas under abnormally high pressure.

As the development angles and levels advance, this pressure produces bumps which, though not as destructive as those occurring in the Crows Nest Pass coal field, are at times quite serious and play havoc with the angles or levels in which they occur. The bumps referred to are accompanied by heavy flows of methane, and owing to the heavy pressure produced the coal is ground into a veritable powder.

Lagging is constantly kept at the advancing angle faces, and on the first indication of a bump the places are lagged off so that should a run take place the cavity produced will be kept relatively small. Once the gas bleeds off the pressure drops and makes it possible to reopen the places and continue advancing. Instances are on record, however, where the lagging failed to withstand the pressure with the result that hundreds of tons of coal came away and filled the intake airways, making it necessary to withdraw the men until the gas bled off.

Where conditions are such that it becomes necessary to adopt the angle method of mining, care has to be



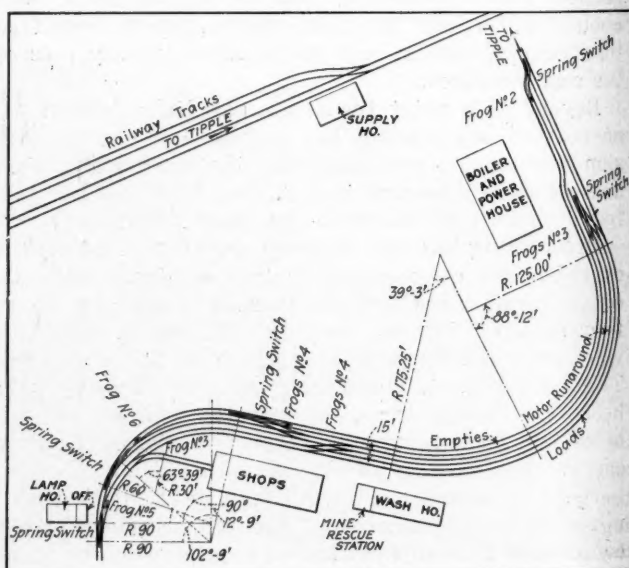
NEW TIPPLE OF THE JASPER PARK COLLIERIES

taken that the cross-cuts between the angles break through directly opposite each other. Otherwise in the extraction of the pillars there is a possibility of much coal being lost and the work of extraction being rendered extremely dangerous. The system heretofore employed at the Jasper Park collieries has been to develop extensively and block out the ground as the angles advanced. Doing this naturally gave the false footwall a chance to break and incidentally brought on or aggravated the thrust coming from the footwall side. The angles were also turned off the upper counter, and before breaking through on the surface—a distance of over 1100 ft.—the lower part of the angles and the cross-

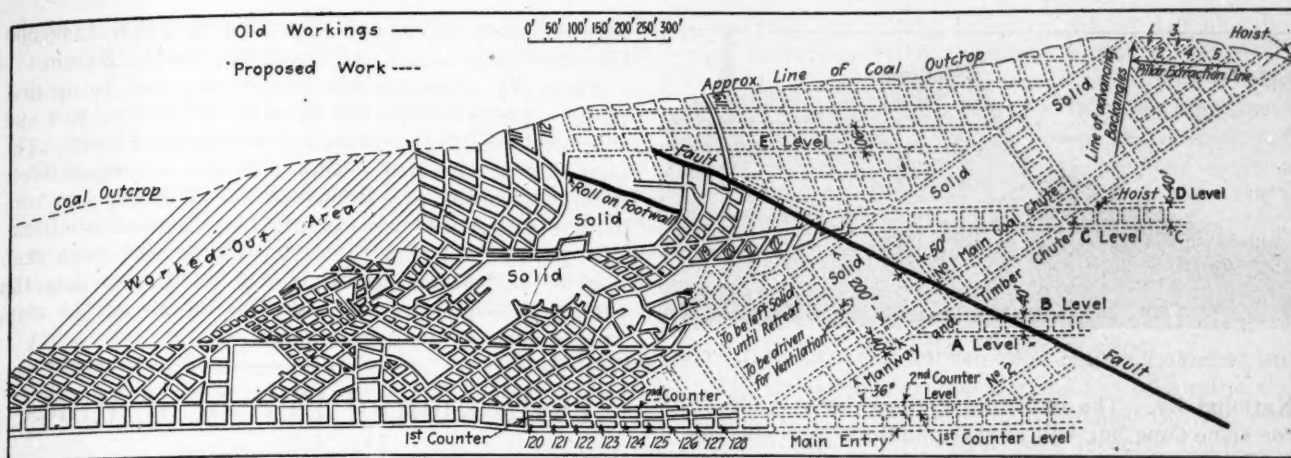
cuts between gave considerable trouble and were a constant source of expense. Frequently an angle would have to be stopped until the chute was ripped and regraded and new rib posts placed on the high rib. The cross-cuts and pillars were also constantly under repair, and if left too long before being extracted it became necessary to make entirely new roads into the pillars. The danger of a creep is always present; the hanging wall is a hard siliceous shale and only breaks over a large area. To offset this, however, the false footwall sloughs off as soon as the pillars are extracted and drops down with the pillars, thus

forming a fulcrum against the live workings and the gob, and reducing the possibilities of creep when the hanging wall breaks.

The method of mining just described has been found unsatisfactory and will be abandoned. Instead of advancing several angles at once and blocking out the pil-



PLAN OF TIPPLE TRACKS, JASPER MINE



SHOWING PROPOSED NEW METHOD OF WORKING THE NO. 2 MINE

lars as the angles advance, a modified panel method will be established and the blocks left intact until the two main angles extended from the main entry to the surface are completed. These main angles will be from 200 to 300 ft. apart; the outside angle will be used as a main coal road and the inside angle as a manway and timber raise. Small air hoists will be placed at different points on the timber raise with a view to eliminating the old system of packing timber by hand, which was inefficient and extremely trying work.

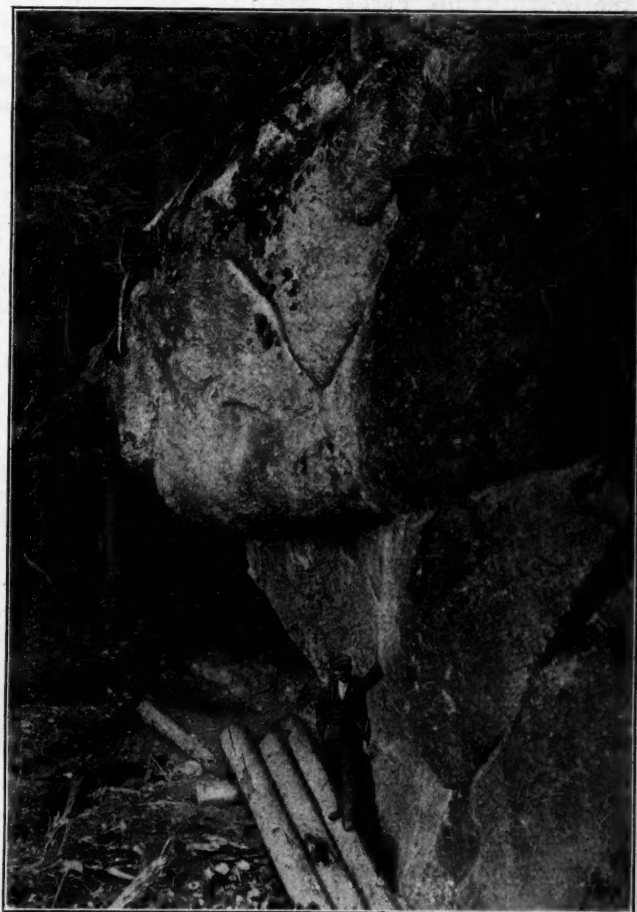
When the main angles are completed, back angles will be turned, commencing at the top or outcrop, and as soon as a back angle breaks through on the gob outside the pillars will be immediately extracted. By following this method the footwall pressure will confine itself to the gob and the pent-up gases allowed to escape direct into the return airways. It is also presumed that the release of the gas in the gob will materially reduce the thrust from the footwall in the back angles advancing below. This should eliminate the bumps that formerly occurred. Extracting the pillars as soon as the back angles break through should also give a greater recovery from development and should considerably reduce the cost of maintenance. There will be practically only the two main angles to keep in repair, and being in solid ground these should not give much trouble.

Should it be found that the distance between the main entry and the surface is too great to be worked in one lift, the ground will be divided into three lifts and one kept in advance of the other—the top lift being in the lead. (Plans of the workings to date with proposed extensions are

shown in the diagram at the head of this page.) The main entry is 8200 ft. long and all haulage is done by compressed-air locomotives, three 8-ton Porter compound machines being now in use. The mine cars have a capacity of 2½ tons, and 20 cars comprise a trip. One locomotive attends to the chutes inside and delivers the loads at a parting 2500 ft. from the portal of the tunnel, from which point they are transferred to the tippie by the locomotive operating the outside run. The third locomotive is kept available in case of a breakdown.

The tippie is modern in every respect and is capable of handling 1500 tons per day. The loads pass over a Philips automatic cross-over dump and then to a lower level from which point they are caught by a grab chain and elevated to the empty track, where they gravitate to the tunnel entrance. Trackage is provided on the tippie for 200 loads, and all dumping is done on the morning shift.

The power and boiler house is constructed of concrete throughout. The power plant consists of one steam-driven Ingersoll Rand air compressor capable of delivering 2000 cu.ft. of air at 900 lb. pressure, also two Electric Machinery Co.'s six-cycle, three-phase alternating-current generators of 75 and 184 kw. respectively, both of which are coupled direct to high-speed Robb-Armstrong engines. The tippie machinery, machine, carpenter and blacksmith shops are operated entirely by electricity while a lighting system is provided for all buildings at the mine, as well as the miners' cottages and the townsite. Electric power is also supplied the company's Miette mines, situated at Bedson on the Canadian



SHOWING MASSIVE CONGLOMERATE LYING IMMEDIATELY UNDERNEATH THE COAL MEASURES



DEPARTMENT STORE, POST OFFICE AND GENERAL STORE

National Ry. The latter mines have been closed down for some time but will reopen again early in the fall.

The steam plant consists of a battery of four Leonard & Son's return tubular boilers, with a total of 600 hp. The coal used at the boilers is brought direct from the tippie bunkers to the boiler house by conveyors.

The company has built a department store on the lower townsite, also an up-to-date hospital and school-house on the upper townsite adjacent to the miners' cottages. Altogether 80 three- and four-roomed cottages have been built which rent at \$9.50 and \$13 per month respectively, including water and light. Suitable garden plots are also attached to each cottage. The climate is exceptionally healthful and the camp free from sickness. At some distance from the camp there are some hot sulphur springs which are noted for their curative qualities.

The Jasper and Miette properties controlled by the Jasper Park Collieries, Ltd., consist of 7219 acres of coal lands lying adjacent to the Grand Trunk Pacific and Canadian National railways. The company also controls 900 acres of surface rights consisting of timber limits and townsites.

The estimated content of coal in both properties is

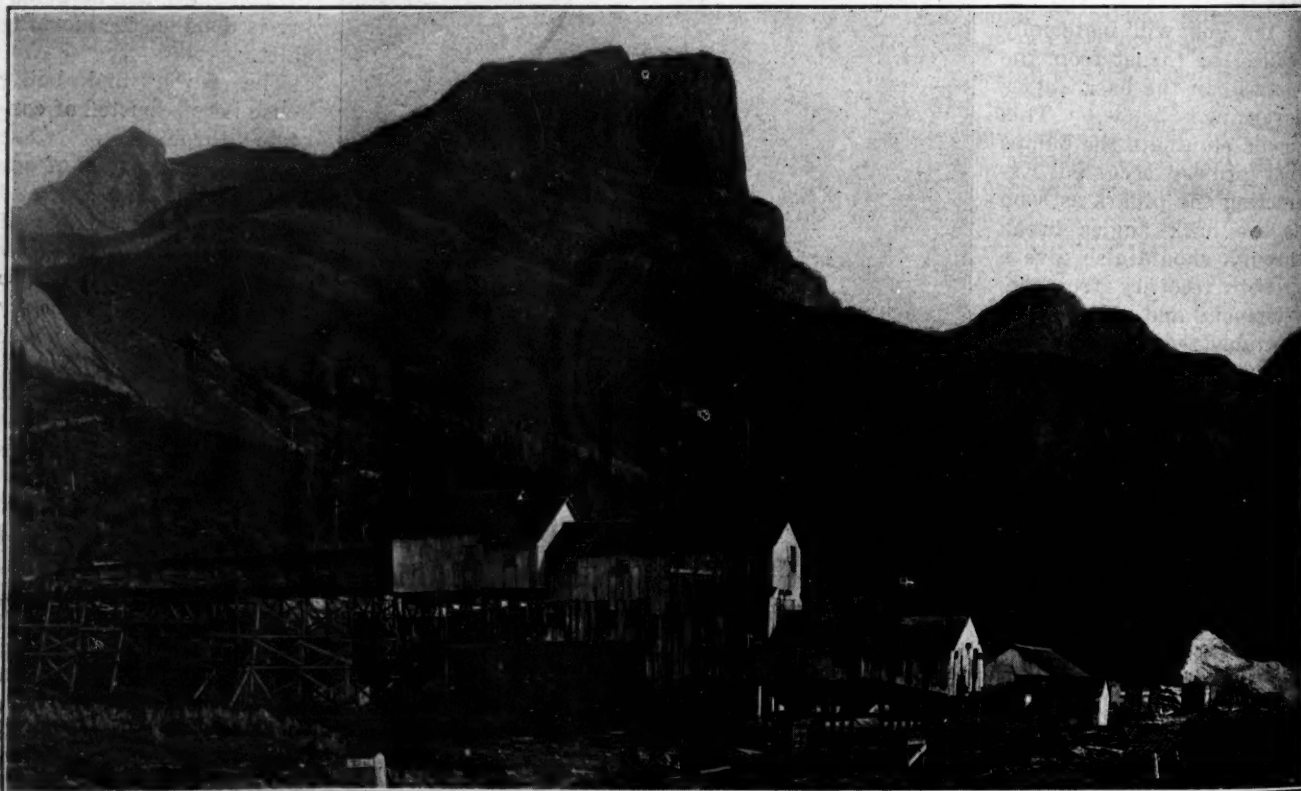
approximately 15,000,000 tons. To date only 1,000,000 tons have been mined, and that from the No. 2 seam.

Plans for extensive development are now being prepared. These include the opening up of Nos. 1, 3 and 4 seams recently prospected by diamond drill. The structure of the Nos. 1 and 4 seams is comparatively good; the walls are composed of sandrock, and conditions in general are favorable for extensive mining. The production from the latter seams will more than double the former output, and at no distant date the camp of Pocahontas will doubtless be one of the most progressive in northern Alberta.

Dedication of Bureau of Mines Buildings

With practically all plans completed for the dedication of the Bureau of Mines buildings and the fourth national first-aid and mine-rescue contest, members of the different committees on arrangements in Pittsburgh are awaiting the results of their labors. Through the financial assistance of the Chamber of Commerce, an elaborate 64-page souvenir booklet will be given each visitor to the bureau building. The cover of the booklet contains a two-color reproduction of a medallion of Joseph Austin Holmes, through whose creative imagination the Bureau of Mines buildings have been constructed.

The booklet contains many illustrations of the different phases of work being done at the station as well as descriptions of the coal-mining, mine safety, fuel, electrical, mechanical and chemical departments, and includes other coal and miscellaneous analytical laboratories. A program covering the three-day activities is in the fore part of the booklet as well as a list of the prominent mining men who have served on the various



JASPER MINE TIPPLE, WITH MOUNT ROCHE MIETTE IN BACKGROUND

arrangement committees. The booklet will be used in conjunction with the inspection trips through the buildings.

Guides will be available for the visitors at the commencement of ceremonies proper at 8:30 a.m. Monday, when the Bureau will be thrown open. They will remain on hand during the ensuing three days. The event will not be in the nature of a holiday for the employees, as they will remain at their posts and carry out the regular routine of the day that the guests may be able to see the station as they would see it during any other day of the year.

Starting on Sunday, Sept. 28, the receiving committee will meet the incoming visitors at the Fort Pitt, Schenley and William Penn hotels. On the following day, at 10:30 a.m., the dedicatory ceremonies will be held in the rear of the main building with Director Manning presiding. Dr. S. B. McCormick, Chancellor of the University of Pittsburgh, will give the invocation, following which an address of welcome by Hon. E. V. Babcock, Mayor of Pittsburgh, will be responded to by Hon. Franklin K. Lane, Secretary of the Department of the Interior. Horace B. Winchell, President, American Institute of Mining and Metallurgical Engineers; John L. Lewis, President, United Mine Workers of America, and Hon. William C. Sproul, Governor of Pennsylvania, will comprise the list of other notable speakers. The handing over of the keys to the building by Secretary Lane to Director Manning will close the dedicatory ceremonies proper, following which luncheon will be served in the Bureau buildings.

TRIP WILL BE MADE TO THE EXPERIMENT MINE OF BUREAU OF MINES

Monday afternoon will be taken up with a trip to the experimental mine at Bruceton, where a coal-dust explosion will take place. Special trains will handle the visitors out to Bruceton from the siding near the Bureau buildings. In the evening, a meeting under the auspices of the Chamber of Commerce will be held in Carnegie Music Hall. An organ recital by Dr. Charles Heinroth, of the Carnegie Institute of Technology, will precede a moving picture entitled "The Story of Coal," in which a great many of the experiments in use at the Bureau will be demonstrated.

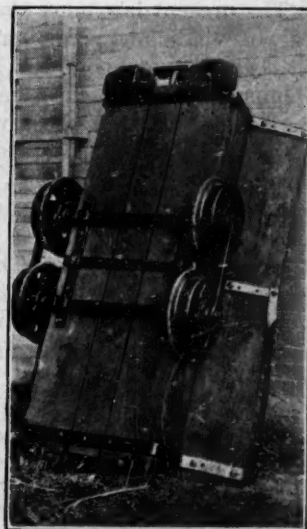
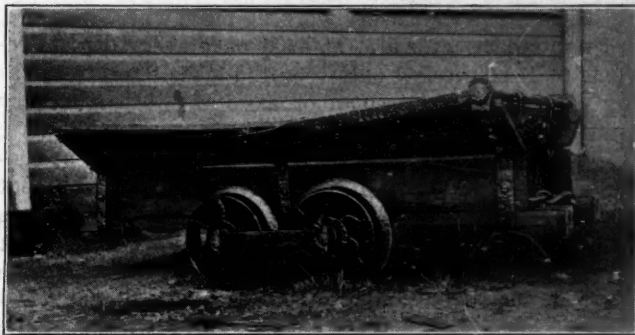
On Tuesday morning, Sept. 30, the elimination mine-rescue contest will be held in a special gas gallery at Forbes Field, and in the afternoon, the elimination first-aid contest will be held at the same place. First-aid teams from fifteen states have been entered so far that include Washington, Kansas and California. The ten mine-rescue teams making the best scores will enter the final contest on the following morning for the national cups and prizes. The twenty first-aid teams surviving the elimination contest will compete Tuesday afternoon for the national cups and prizes. One of the features of the elimination first-aid meet will be the awarding of prizes to the champions of each state. These prizes will be independent of the results of the final contest, and have been arranged for through the generous co-operation of the business men of Pittsburgh, companies and manufacturers of national importance in the mining industry. Major M. J. Shields, of the American Red Cross, will be chief judge.

Following the first-aid contest on Tuesday afternoon will be a coal-dust explosion in a wooden gallery at Forbes Field. The evening will be devoted to a pageant,

glorifying the mining industry, which will likewise be held at Forbes Field. Wednesday, Oct. 1, will be given over to the final mine-rescue and first-aid contest during the latter part of which Director Manning will announce the awards of the Joseph A. Holmes Safety Association. A repetition of the previous day's coal-dust explosion will follow the first-aid finals. The evening will be given over to a smoker by the Chamber of Commerce, during which the team prizes will be awarded to the respective winners.

An Old Mine Wagon

The accompanying illustrations are of a mine wagon more than 30 years old, from Clearfield County, central Pennsylvania. This wagon was recently found in old workings of the Glen Richey No. 1 Mine of the Rembrandt Peale interests, which was the first coal operation of Rembrandt Peale, that mine being opened in 1882 and afterward abandoned. During the present



VIEWS OF AN OLD MINE WAGON FOUND IN AN ABANDONED OPERATION

year this mine was reopened and this old wagon found in the workings in an excellent state of preservation. It could be used today for hauling coal if necessary. The wagon is 5 ft. 10 in. long and 3 ft. 6 in. wide, with a capacity of 12½ cu. ft. It is typical of the type of mine cars used in central Pennsylvania low-seam operations in the early days. It is an interesting relic to the pioneer coal operators of central Pennsylvania and is now on exhibition at the St. Benedict offices of the Rembrandt Peale interests, St. Benedict, Pennsylvania.

Coöperation Between Firebosses and Assistant Foremen

Existing statutes and practices in Pennsylvania permit an apparent conflict or overlapping of the duties of fireboss and assistant mine foreman. This may be the occasion of much friction, discord and inefficiency. All of this may however be obviated through mutual understanding between all of the officials concerned

BY A. T. DICKSON

Roscoe, Penn.

THE Pennsylvania mining law adopted in 1911 made a wise provision concerning the safety of the miner, when it required the mine foreman or his assistant to visit every working place where men are, or ought to be, at work, at least once every day. Previous to 1911 the law only required a visit to the working places by the foreman or assistant foreman every alternate day, even where no firebosses were employed.

Comparisons are odious, but compare the present conditions with those prevailing previous to the enactment of the present law. Today the Pennsylvania statutes require two examinations by the fireboss of every part of the mine under his charge, and also a visit to each working place daily by the mine foreman or his assistant. The law therefore insures two visitations daily by certified officials while the men are at work.

The present law more than tripled the required number of visits and examinations over the old measure. Still there was room for improvement, and when the Pennsylvania compensation law went into effect common-sense and self-preservation of financial resources by the coal companies stepped in and made another revolutionary change by employing sufficient assistant mine foremen to insure in some cases four visits each day by the assistants to each working place while the men were at work. This radical change resulted in placing at some of the mines, especially those carrying their own insurance, as many or more assistant mine foremen than there were firebosses.

CHANGE IN CONDITIONS BROUGHT NEW RELATIONS

These improved conditions as to the safety of the miner brought about peculiar relations between the firebosses and assistant foremen, not so much as to their lawful duties, but in regard to their general duties. Under the old law the fireboss after his first examination was employed in doing odd jobs about the mine such as laying road, building doors, digging ditches, etc. Others made a second visit or examination covering the section of the mine under their charge and had full responsibility for that section, both as to safety and supervision of the work therein. After the fireboss' shift was done he went home. This was generally about eleven or twelve o'clock. For the rest of the day no one visited the working places. A comparison of the past with the present seems to indicate that some progress has been made toward securing the safety of the men working in the mines.

The fireboss in the old days was not in doubt as to

what his duties were or what the employer demanded of him, and since many of the firebosses who presided then are still on the job, perhaps in the same capacity, they find that they are employed principally in the interest of safety to the employees of the mine. It seems, however, that the old custom of engineering the work on the section is hard for some of the firebosses to get away from, and for this reason there is a good deal of friction between the firebosses and assistants at some mines, since there is seldom any intelligent standard of duties set down to guide the fireboss as to what is required of him aside from his lawful duties.

This causes much confusion, and the fireboss and assistant foreman instead of working hand in hand as they should sometimes find themselves in the dark as to who is responsible for this and that, each one trying to shift the responsibility onto the other. The fireboss and assistant foreman ought to get together and have a thorough understanding so there will be a spirit of coöperation between them.

Some firebosses labor under the impression that when they have found the section free from gas they have done their duty, but the law requires that they examine all portions of the mine under their charge for all dangers, and tacitly implies that they shall see as far as possible that the lesser perils are removed immediately upon discovery when it is practical to do so. Any sensible man knows that the coal companies do not operate their mines just to keep men in employment, consequently, they do not employ both firebosses and assistant foremen to pay them wages, but that they may coöperate in the interest of all.

The fireboss is on the section for only a few hours after the arrival of the miners, and therefore cannot do justice to the miner or the company in having complete charge of a section or the placing of men. When there were no assistant foremen the firebosses had full charge of their respective sections and were not at a loss as to how to proceed. They placed the men and looked after the sighting of the rooms and entries, marked off breakthroughs, and were required to engineer all the work on their sections in the absence of the mine foreman, who often would not be on the section for months at a time.

But now that the assistant has come onto the scene he assumes the major portion of duties which formerly devolved upon the fireboss. There is however no clearly defined classification of special duties that draws the line where each official's duties begin and end. Shall

the assistant sight the entries and rooms or shall the fireboss? Shall the assistant inform the cutters when to start breakthroughs or shall the fireboss?

Some mine foremen have a printed set of rules setting forth the work and duties of motormen, snappers, drivers and other workmen; these are handed to the employees or placed in conspicuous places. This is certainly a commendable plan, but how many foremen have printed rules for firebosses and assistants which distinguish between the duties required of each?

Suppose a mine foreman or some other official in visiting a section notices here and there a room which according to law requires a breakthrough, and draws the attention of the assistant to such places, telling him that there ought to be cutthroughs in those places. "Well," says the assistant, "the fireboss looks after the breakthroughs. I'll tell him about it."

Now it may be customary for the fireboss to look after the breakthroughs, but the law requires the mine foreman or his assistant to see that they are made at required distances. If an entry or a room gets off sight, who is going to be held responsible? These are minor details, yet they concern the safety of the men. It is generally over such a point as this that friction is generated between the fireboss and assistant foreman.

The fireboss on making his first morning examination has the best chance to see whether or not the working places are in a safe condition. If not, he has only to fence the places off that he considers unsafe, and the assistant foreman will then see to it that the places are made safe or penalize the miner by stopping his turn or sending him home for a day or two.

In many instances the assistant goes into a place soon after the fireboss has examined it and finds the miner working under conditions that are anything but safe, which conditions the fireboss carelessly overlooked. He calls the attention of the miner to this and the miner replies that "the fireboss didn't say anything about it." The assistant gets "riled" at this and exclaims: "I want you to know that I am saying something about it. The fireboss ain't running this."

Later the assistant asks the fireboss why he didn't fence the place off, telling him that he had to stop the man's turn. The fireboss replies, "Oh, I thought you would be around in a little while and you could do as you pleased about it."

The assistant's action in this case reflects upon the fireboss, and the fireboss gets sore at the assistant. The assistant now has the dislike of both the fireboss and the miner, because the miner thought that if the fireboss had no fault to find with his place the assistant should not have. Conditions are thus just the reverse of what they should be.

The fireboss should remember that his second examination is just as important as the first one, and if he finds the miners working under unposted or improperly posted slate or any other condition that he thinks is dangerous or contrary to custom, he should fence such places off and report them on the record book. This will clear him in case anything should happen. When an assistant notices a condition that is not necessarily an immediate danger, he should consult with the fireboss and have him fence the place off on his first examination the next day. The miner will more willingly put his place in shape when he finds it is fenced off. A little coöperation like this will produce prolific results.

A fireboss who had just started on a certain job had

a friendly talk with the assistant. The former said: "You and I have charge of the section and are both responsible for the safety of the men under our charge and the condition of the section. If on your examination you find any places that you think unsafe, put a danger board up. Use your own judgment as to the safety of the places, and I'll back you up, but do not take a board down again unless I give you permission." The fireboss and assistant then and there came to a thorough understanding upon all the details of their work. They decided who would look after breakthroughs, sight the places, place the men, start new rooms, etc. When any new condition would crop up they would hold a consultation. Thus each official knew exactly where he stood in relation to his duties. This is true coöperation.

A Good Way to Make a Rough Survey

In a recent issue of the *Engineering News-Record* appears an article by John H. Sawkins, of Schenectady, N. Y., in which he presents a method of computing the distances, on any course to be surveyed, based on the fact that the sine of 35 min. is very closely 0.01, and so a course 100 ft. long would show a divergence of exactly a foot if an angle of 35 min. were turned from the correct direction.

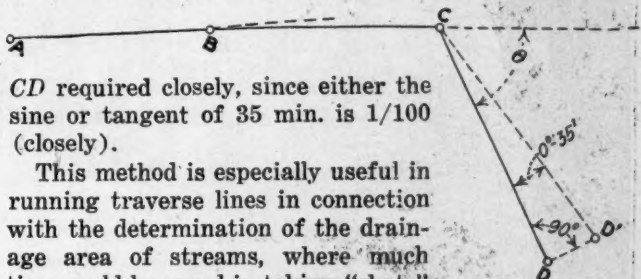
He states that by setting a flagpole along the line of divergence, using a cloth tape to measure the distance from the station, and multiplying the length thus obtained by 100, the correct length of the course can be ascertained with as much accuracy as can be attained with a stadia reading. It is also much quicker, especially in rough country.

The method is suggested by the accompanying sketch and is as follows: Let $ABCD$ be a portion of a transit traverse line, the directions of the lines AB , BC , CD , etc., being determined by deflection angles, as usual. The lengths would be found as shown for line CD , the 35-min. method being employed for that purpose. With the transit at C , backsighted on B , the telescope is plunged and the point D (being selected by the front flagman) is sighted on deflection angle θ being recorded to the right.

The front flagman then approximates a line DD' at right angles to CD , and the transitman increasing or decreasing angle θ by 35 min., lines in the flagman, who moves the flag along DD' to some point at D' . Except for unusually long sights the line DD' is short, and the approximation on the right angle CDD' introduces little error. The flagman measures DD' with a cloth tape, and this length times 100 gives the distance

CD required closely, since either the sine or tangent of 35 min. is $1/100$ (closely).

This method is especially useful in running traverse lines in connection with the determination of the drainage area of streams, where much time could be saved in taking "shots" several thousand feet along the ridge line or divide. It is impossible to take "shots" a mile or more in length by stadia, unless an inconvenient length of stadia rod is used.



The A. E. F. University

The sharp contrast presented between the civil-life position and the army rank of the enlisted men who composed our forces during the recent war was brought out strongly when it came to finding instructors for the American Expeditionary Force University. This impromptu university, which was in existence at Beaune, Côté d'Or, France, from March till June, 1919, had 7000 students enrolled in all the courses and a faculty of more than 600, eighty per cent. of whom were men in the service. The other 20 per cent. were mainly Y. M. C. A. men.

The majority of the instructors in the A. E. F. University were officers, though the enlisted men ran them a close second. A "buck private" possessing a Ph.D. degree taught a course in the geology department, and a mining engineer from Salt Lake City, who was a Corporal of Marines, taught the course in ore dressing in the mining department.

In Fig. 1 is shown the faculty of the mining department. From left to right the men are: Hugh Archbald, Captain Infantry, mining engineer, Scranton, Penn.; E. C. Dietrick, Captain Engineers, civil engineer, Tucson, Ariz.; Alfred C. Lane, professor, Tufts College, Boston, Mass., head of the Department of Mining, A. E. F. U.; Horatio C. Ray, Captain Engineers, professor of metallurgy, University of Pittsburgh; Jacob E. Rypinski, Corporal Marines, mining engineer, Salt Lake City, Utah. It can thus be seen that the faculty was drawn from all over the country.

Fig. 2 shows part of the equipment that was used in the teaching of mineralogy. When the university was started, it occupied a bare building that was



FIG. 1. FACULTY OF MINING DEPARTMENT

originally intended for a wartime hospital. Outside of a few camp chairs, there was nothing. Dr. Lane, who was the head of the department and taught the course in mineralogy, hustled around to obtain specimens. The University of Dijon, an old French institution, kindly lent him a large collection of hand specimens. M. Changarnier, curator of the museum at Beaune, personally possessed a large collection of minerals and fossils. Many of his specimens he presented to the mining department. All these, in addition to a number that were purchased by the University in Paris, made quite a decent collection for the teaching of mineralogy.

Equipment for instruction was one of the things which were lacking, as this takes time to accumulate



FIG. 2. PART OF THE COLLECTION OF SPECIMENS USED IN THE TEACHING OF MINERALOGY

in any school for metallurgy and ore dressing. There were no books that could be given to the students, and so the courses had to be drawn from the practical experience of the faculty. Perhaps the very lack of books gave to the instruction a freshness that never can be duplicated.

The town of Beaune is situated in a part of France in which considerable mining is carried on, so that the students of the A. E. F. U. were taken on tours of inspection to many kinds of mines. They saw fluorspar, oil shales, gypsum, iron, building-stone quarries, and particularly coal mines. The coal beds of eastern-central France are much faulted, so that the mining conditions are difficult. In consequence, the chance for instruction in mining was greater. The region round Beaune is also very interesting geologically. Specimens were brought back from all the trips made by the students, so that by the time the University closed quite a collection had been gathered toward starting a small museum.

Captain Archbald taught the course in mining; Captain Dietrick had the course in surveying; Professor Lane, mineralogy; and Corporal Rypinski, the course in ore dressing. As the principle underlying the instruction at the University was to let the student study anything he wanted, there were many pupils who would not ordinarily fit into a regularly scheduled college course. Instruction had to be adapted to suit them. One student, who put himself down as a "pocket hunter," a sergeant who had been several years in the regular army, got a lot out of the course in mineralogy, though he knew no chemistry or trigonometry. Another, who stated a desire to sell high-grade mining stock after the war, took the course in mining. A third, who had been a locomotive engineer, pushing empties into a coal mine, through the courses offered got a start toward becoming a mining engineer.

The A. E. F. University was not a finished institution, but it probably did a good work under a special situation, and one which in all probability will not occur again for some time.

Advantages Claimed for Pulverized Fuel

BY MARK MEREDITH
Liverpool, England

The subject of pulverized fuel is attracting increasing attention in Great Britain. Foremost among the advantages claimed for this system are (1) complete combustion, each particle of fuel being surrounded by air and undergoing almost instantaneous combustion; (2) the use of a minimum amount of air owing to the approximation of the fuel to the form of gas—thus a 20 per cent. excess air becomes possible, as compared with 50 to 200 per cent. in the case of solid fuel furnaces; (3) the consequent higher temperature of combustion; (4) reduction of loss of heat through the diminished volume of waste gas; (5) minimum amount of unburnt carbon down to one-half of 1 per cent., as against 4 to 5 per cent. in many furnaces fed with ordinary solid fuels; (6) the decreased labor attaching to ash removal; (7) the maintenance of a less oxidizing atmosphere; and (8) the utilization of low-grade fuels not otherwise serviceable in modern types of furnaces, leading to economy of fuels of higher calorific value.

It may be urged that, sooner or later, the direct combustion of coal, and consequent loss of byproducts, must cease in this country, this being, however, largely de-

pendent upon the report of the Fuel Research Board's experiments now in progress, and that the changes necessitated by the introduction of the new system would hardly be justified. Assuming that such prohibition eventuates, it is still urged that pulverized fuel should be the last example of direct combustion to go. Further, the fact that the system is applicable to coals of low grade unsuited to present furnaces, and that such utilization is a direct step toward coal conservation, justifies the hope that what has presumably been an undue delay in this development in this country by reason of war conditions may now give place to the introduction of the method. Even if coal carbonization on the large scale obtains in the near future, it is still claimed that pulverization will be applicable to a coke containing 10 per cent. of volatile matter, such as results from low temperature carbonization with recovery of fuel oil.

The extension of the method in America may be judged from its application to steam boilers, locomotives, openhearth puddling, and reheating furnaces, in soaking pits, for annealing, brass melting and other purposes. The production and maintenance of a nearly neutral atmosphere at once leads to a reduction of scale formation in billet heating, and to a considerably increased life of annealing boxes.

More recently pulverized fuel has been used in admixture with fuel oil, a suitable mixture containing 70 per cent. of oil and 30 per cent. of powdered coal, the mixture being applied without any change of burners or combustion areas.

Legal Department

RIGHT TO RESCIND COAL SALES CONTRACT—The general rule of law that right of one party to a contract to rescind because of the other's breach of some provision of the agreement may be defeated through the former being in default, too, was applied by the United States Circuit Court of Appeals, Eighth Circuit, in the late case of *Carter vs. White Oak Fuel Co.*, 257 Federal Reporter, 54. Defendant contracted to make monthly deliveries of coal to plaintiff during a certain period, plaintiff agreeing to pay by the tenth of each month for coal delivered in the preceding month. Only partial deliveries were made the first three months. Plaintiff did not pay within the time required by the contract, but did pay each month for coal received the preceding month. The third payment was not made until the 22d, although defendant had given notice that no more fuel would be delivered unless payment should be made by the 10th. No further deliveries being made, plaintiff sued for damages. The defense was that the contract was rescinded for plaintiff's default in paying for the coal as payments fell due. Plaintiff replied that there had been an extension of the time for payment, by mutual agreement. Affirming judgment in plaintiff's favor, the Circuit Court of Appeals says: "The verdict establishes the fact that at the time the defendant attempted to terminate the contract, and when it declared that it would proceed no further under it, it was itself in default of performance of an essential covenant of the contract, because it had failed to deliver the agreed amount of coal the plaintiff was to receive in August, September and October. The right to repudiate a contract for the default of the other party thereto cannot be exercised by a party who is himself in unexcused default of performance of an essential covenant thereof."

Coal Washing on Concentrating Tables*

BY J. B. MORROW
Dawson, N. M.

IN COAL-WASHING practice with tables, the largest efficiency mainly has been secured in the treatment of the fines from $\frac{5}{16}$ in. in size down to dust. It has always been a relatively simple matter to effect a clean separation of the coarser sizes, thereby offsetting the loss from the fines, especially when they were not present in the feed in large amounts.

In the Dawson practice, in 1908, there was only five per cent. of material under $\frac{5}{16}$ in. in the raw coal to the washer; but with improved screening facilities the percentage of fines was greatly increased, at times running up to 30 per cent. The loss of fine coal in the waste then began to be a serious factor in the operations.

In 1906 some experimenting had been done with a Wilfley table by T. H. O'Brien and, while good results were obtained, its small capacity precluded the use of this machine on a commercial scale. In 1911, when the problem of the fines began to get troublesome, further experiments were made, using a larger-deck Wilfley. The results secured were so satisfactory that a plant was constructed with 24 tables, their average capacity being between five and six tons per hour.

At the time of remodeling the plant some consideration was given to the feasibility of crushing all the coal to $\frac{5}{16}$ in. and washing it over tables, but the large floor space necessary, together with the added expense of drying all this fine material, made it appear advisable not to crush below $\frac{3}{4}$ in., at which point separation tests had shown that an appreciable saving could be made.

The material is first handled on a three-compartment jig which makes a clean coal, a clean reject and a middlings product. The middlings consist of coal mixed with bone, slate, etc. These are crushed to $\frac{5}{16}$ in. and under, and together with the hutch material is sent to the tables for further treatment.

AVERAGE RESULTS FOR A MONTH

The average results for last month gave a washed coal with 12.5 per cent. ash and a tailings with 53 per cent. ash. The separation tests on the raw coal show that a tailing product with 55 per cent. ash is the cleanest product that can be made for a 12.5 per cent. ash washed coal.

It is the practice to permit any manufacturer to install his table and run it in competition with the others. So far five different makes of table have been tested. The main difference in these tables lies in the head-motion and in the shape of the decks.

The chief virtue of the table as a coal cleaner lies in its sensitiveness to adjustment and full visibility of the process, together with the ease with which the quality of the product may be varied. The variables as they affect practice are as follows: (1) Length of stroke, (2) revolutions per minute, (3) lateral inclination, (4) longitudinal inclination, (5) dimension and spacing of riffles.

As an illustration of what can be accomplished on a machine of this kind, the figures that follow show the result of a test run made on an Overstrom-Universal table. This device has some features in which it differs from all other tables.

The head-motion consists of an unbalanced pulley driving loose on a shaft rigidly attached to the table deck, this motion being limited by a fixed stop on one end of the stroke and a cushion spring at the other, thus doing away with all eccentrics, cams and toggles.

There are no bearings under the deck, but it is supported from the floor frame by laminated wooden springs which allow the table to swing lengthways as an inverted pendulum, the motion being in the arc of a circle, the riffles also being laid out in arcs practically parallel to the line of motion.

The supporting legs are inclined slightly backward toward the head-motion, causing the table to rise on its forward stroke. On account of the method of imparting reciprocating motion to the table, it will automatically increase or decrease the stroke with a heavier or lighter feed.

FEED TO TABLE A HARD PROPOSITION

The feed to the table, which consisted of jig hutch and reground middlings ranging in size from $\frac{3}{8}$ in. down to fine sludge, is a harder proposition to handle than the primary coal on account of the concentration of the bony matter, some of which will only have a small differential in specific gravity to distinguish it from the rock or coal.

The tonnage handled was five tons per hour, having a composition, as shown by the specific gravity separation, of

46 per cent. coal at 48.0 per cent. ash
54 per cent. coal at 11.3 per cent. ash
100 per cent. feed 28.2 per cent. ash

The results obtained were:

49 per cent. clean coal with 11.6 per cent. ash
40.6 per cent. clean rock with 48.7 per cent. ash
10.4 per cent. middlings with 27.5 per cent. ash
100 per cent. 27.66 per cent. ash

This is equivalent to a recovery of 91 per cent. of the coal. If the middlings were put in with the waste, it would give 51 per cent. waste with an ash of 44.1 per cent. as compared with 48.7 per cent. in the theoretical separation, carrying 10 per cent. of recoverable coal.

In practice, these middlings from the primary machines are again treated on a table using a shorter stroke and lower riffles and the final waste from the mill contains an average of 5 per cent. of recoverable coal, or, expressed in another way, 99 per cent. of the recoverable coal in the feed is reclaimed.

Superior Oil in Air Compressor

When an inferior oil is used in an air compressor, it will in some cases deposit so much carbon on the outlet valves that they stick and do not perform their proper function. The rapidly running air compressor then churns the air in the cylinder around so often that at last the heat reaches the "firing point" of the oil, and the oil is then ignited, causing the wreck of the machine. Oil for an air compressor should have a high flash point, be easy running and at the same time have sufficient body to lubricate the hot inside surface of the air cylinders. The quantity used should be as small as it is possible to employ and yet assure adequate lubrication of the rubbing surfaces.

*Paper presented before the spring meeting of the Rocky Mountain Coal Mining Institute, Salt Lake City, Utah.



Sez Uncle Sam

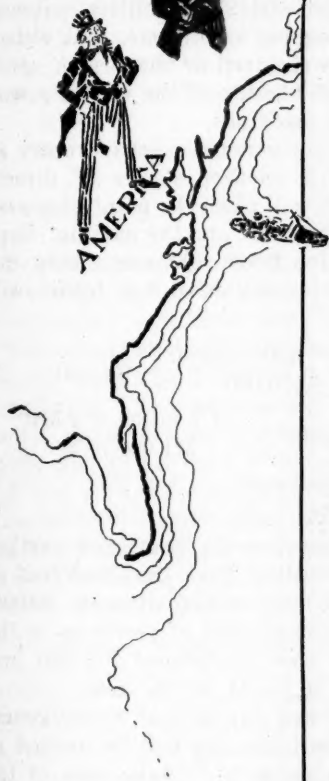
Written Expressly for Coal Age
By RUFUS T. STROHM

A LOT of folks has got the blues
From readin' in the daily news
That every week, ships sailin' east
Take back two thousand men, at least,
That used to labor in our mines
An' help to build our railroad lines;
But as fer me, I'm cool an' ca'm,"
Sez Uncle Sam.

T HESE fellers don't belong to me,
An' more than that, the country's free;
So, when a workman trails his nose,
It's no one's bizness where he goes;
Besides, ef these dubs sail away
Because they hate the U. S. A.,
I'd say that I'm in luck, by damn!"
Sez Uncle Sam.

E F they jes' hanker to git back
Among the ruin an' the wrack,
Where death goes stalkin' to an' fro
In hand with famine—let 'em go!
I hope they git a stomachful
Of all this socialistic bull,
An' anarchy ad nauseam,"
Sez Uncle Sam.

T HEN, mebbly, when they're good an' sick
Of places run by Bolshevik,
They'll want to come back here again
To live with honest, decent men;
Well, then, perhaps they may git by—
Ef I've not raised the bars too high!
That's jes' the sort of guy I am,"
Sez Uncle Sam.



Selection of Power for Mine Service

Effectiveness of a Mine Power System Depends Upon Method of Distribution Selected—
All-Direct or a Combination of Direct and Alternating Current Are Alternatives
Usually Encountered—The Latter Offers Many Advantages

BY E. STECK
Clinton, Ind.

THE output and economical working of a mine is dependent on the kind of power used for its operation. Whether alternating or direct current or a combination of both is to be used depends on the size of the mine, the equipment above and below ground, the length and location of the entries, and the location of the coal.

The only kinds of current used in Illinois and Indiana are 275-volt direct and three-phase, 60-cycle alternating. Where power is generated the general practice has been to install a 275-volt direct-current generator. Where the mine has a small capacity, say up to 1000 tons per day, and the coal is hauled over entries on each side of the mine, there is no serious objection to using direct-current generators located on top near the shaft. This is also true where power is purchased at 2300 volts alternating current and a motor-generator set or rotary is used to convert the power for underground operations to 275 volts direct current. In case of purchased power the motors above ground can be 440-volt, three-phase, 60-cycle alternating current. Such motors require less attention than do direct-current machines, and the maintenance charges are less. With large tonnages and extended territories the problem becomes more complex.

Take as an example an entry where the parting is back 5000 ft., laid with 55-lb. rail well bonded, and the average amperage is 800, with 275 volts on top at the generators and 250 volts on the bottom. Average voltage at the parting to be 200.

$$\text{The drop in rails} = \frac{10.5 \times 800 \times 5000}{1,150,000} = 36.5 \text{ volts}$$

Two 55-lb. rails well bonded are taken to be equal to 1,150,000 circ.mil of copper. This leaves only 13.5 volts drop allowable on the trolley and feeders. Equalizing the decrease, or allowing 25 volts drop over the trolley and feeders and the same over the rails and feeders, the cross-section of each would be

$$\frac{10.5 \times 800 \times 5000}{25} = 1,680,000$$

The feeder along the rail would be 1,680,000 — 1,150,000 = 530,000 circ.mil. The feeders along a 4/0 trolley would be 1,680,000 — 211,600 = 1,468,400 circ.mil. The weight of these feeders are about as follows:

One 500,000-circ.mil bare cable along track, lb	7,570
Three 500,000 circ.mil., weatherproof, along trolley, lb	28,500
Approximate cost	\$12,000

The cost of feeders, neglecting the cost of installation, is prohibitive. The practice of the average operator would be to install only one 500,000-circ.mil feeder cable along the trolley and none to help out the rail. The voltage drop in this case will be:

$$\text{Drop in rail} = \frac{10.5 \times 800 \times 5000}{1,150,000} = 36.5 \text{ volts}$$

$$\begin{aligned} \text{Drop in trolley and feeder} &= \frac{10.5 \times 800 \times 5000}{211,600 + 500,000} \\ &= 58.5 \text{ volts} \end{aligned}$$

The total drop thus is 95 volts.

The voltage at the parting will be: $250 - 95 = 155$ volts. Power doing useful work = $155 \div 275 = 56.5$ per cent. Power wasted in transmission = $275 - 155 \div 275 = 43.5$ per cent. Eight hundred amperes at 275 volts = 220 kw. Useful power equals 56.5 per cent. of 220, or 124.2 kw. Wasted power equals 43.5 per cent. of 220 or 95.8 kw.

If the power on the entry is costing \$1000 per month, or \$12,000 per year, the cost of useful power is \$6780 while that of wasted power is \$5220.

The speed rating of the locomotives is based on 250 volts at the motors and is 6 miles per hour. At 155 volts the speed will be $155 \div 250 \times 6$, or 3.7 miles per hour.

It can readily be seen that with 275-volt direct-current service, and with the foregoing conditions, that either an excessive investment is required or the cost of operation will be extremely high because of the wasted power and the slowing up of the machines.

The installation of a motor-generator set or rotary at the parting, together with another source of direct-current power at the shaft, will place the point of lowest voltage halfway between the shaft and the parting. Suppose the haulage locomotive takes 400 amp., then the drop in the rails and 4/0 trolley with 4/0 feeder will be as follows:

$$\text{Drop in rail} = \frac{10.5 \times 400 \times 2,500}{1,150,000} = 9.1 \text{ volts}$$

$$\begin{aligned} \text{Drop in trolley and feeder} &= \frac{10.5 \times 400 \times 2,500}{211,600 \times 2} \\ &= 24.9 \text{ volts} \end{aligned}$$

Thus the total drop is 34 volts.

The minimum voltage between the shaft and parting will be $250 - 34$, or 216 volts. Five thousand feet of 4/0 weatherproof feeder costs approximately \$1000. Consequently, with the same amount of power as in the first instance the feeder cost is reduced \$11,000 and the voltage drop reduced $50 - 34$, or 16 volts.

This scheme can be worked out so that motor-generator sets or rotaries of suitable size can be located in various sections of the mine so as to take care of the requirements of gathering motors, cutting machines and haulage locomotives handling that section. Also a source of direct-current power should be available near the bottom to handle the load created by the haulage locomotives between the bottom and the partings.

Where only direct-current is available all the motors on the surface as well as the cutting machines must be direct current. Such motors require more copper for distribution than do alternating-current machines and

the maintenance costs are higher because of commutator and brush troubles. The cutting machines being farthest from the source of electrical supply will have the lowest voltage. If 200 volts is maintained at the parting the voltage at the face, because of the operation of the gathering motors and cutting machines, will be still less. Take as an example an entry back of a parting where there is in operation one gathering locomotive and three cutting machines. The distance from the parting to the face will be assumed as being 1500, rail 20 lb. bonded on one rail, and 2/0 trolley. The average amperage will be about 150.

$$\text{The drop in the trolley} = \frac{10.5 \times 150 \times 1,500}{133,079} = 17.7 \text{ volts}$$

$$\text{The drop in rail} = \frac{10.5 \times 150 \times 1,500}{212,500} = 11.1 \text{ volts}$$

The total drop is thus 28.8 volts.

One 20-lb. bonded rail equals 212,500 circ.mil of copper.

Referring to the instance above where 155 volts were available at the parting we will have 155 — 28.8 = 126.2 volts at the face. Even with all the feeders along the trolley and rails there will only be 200 — 28.8 = 171.2 volts at the face. With such a low voltage at the face the gathering locomotives and cutting machines will have greatly reduced capacities. With alternating-current energy and a motor-generator set the voltage at the face would be increased because 250 volts would be available at the parting and the machine load would be taken off the direct-current service and placed on alternating-current service. Consequently, the voltage at the face would be as follows with an average of 90 amp. required by the locomotive:

$$\text{Drop in trolley} = \frac{10.5 \times 90 \times 1,500}{133,079} = 10.5 \text{ volts}$$

$$\text{Drop in rail} = \frac{10.5 \times 90 \times 1,500}{212,500} = 6.7 \text{ volts}$$

The total drop would thus be 17.2 volts. Therefore the voltage at the face for the gathering locomotives would be 250 — 17.2 = 232.8 volts.

The accompanying table shows a comparison of the possible results here discussed. Condition A is a typical installation. The locomotives are operating below capacity. With the same output, if condition C is maintained only 72 per cent. of the main haulage locomotives, 50.5 per cent. of the gathering locomotives with the same percentage reduction in motormen and tripriders, and 55 per cent. of the cutting machines will be necessary. Or if the same equipment is retained the increased capacity will be as follows: Haulage loco-

tives, 39 per cent.; gathering locomotives, 98 per cent.; cutting machines, 82 per cent.

From the foregoing it is readily seen that proper voltage should be maintained at the various motors so that for a specific output the number of locomotives and cutting machines as well as the operating costs will be kept to a minimum. To determine how to maintain this voltage it is necessary to make a thorough study of the location of the various territories, the tonnage to be taken from each and the future development of the mine. It is then necessary to lay out a system for generating and transmitting power so that the cost and the distributing charges will be a minimum.

Heat-Treated Gearing for Mine Locomotives

Gearing represents a highly important item in the chain of equipment, parts and supplies which, when linked together, tend to make continuous mine operation possible. Too much attention cannot be given to this fact. This is not only true insofar as locomotive equipment is concerned, where much time is required to replace broken gears or pinions, resulting in serious delays to haulage systems, but it is also true of all other gearing in and about mining operations.

So far as gearing is concerned, the delays most commonly experienced can only be successfully combated by using a superior grade of material. Case hardening was the first step in this direction, and although it proved to be quite a success as compared with untreated gearing, it was not the best treatment for mine service, because the glass-hard surface with soft core or center, while ideal from the viewpoint of wear alone, did not have the necessary toughness to withstand the severe shocks and stresses to which mine gearing of all descriptions is continually subjected. Consequently extensive research and experimental work was necessary to perfect a treatment better adapted to mine conditions.

Two important points must be considered by the mine operator when selecting the type of gearing best suited for his purpose. This is especially true of locomotive gearing. These are hardness and toughness; one is just as important as the other. It is not wise to select a gear or pinion with great surface hardness and soft core, capable of giving long service, if steady and continual wear were the only consideration, but unable to withstand the shocks incidental to mine service. Neither should there be selected gearing tough to the point of successfully eliminating breakage, but without the surface hardness necessary to insure long service, from the viewpoint of wear.

The ideal is a combination of the two. This has been obtained in a specially heat-treated gearing; the treatment being founded solely upon these two objects and known as Nuttall BP grade when applied to forged steel and NP grade when applied to steel casting.

To better appreciate the benefits to be derived from the installation of treated gearing that will show results at the end of the year, the following record should be carefully noted:

A Baldwin-Westinghouse mine locomotive equipped with a 35-hp. motor operating over a 5000-ft. haulage road with two maximum grades of 2½ per cent., around a 75-deg. curve, hauling full trips up grade, covered 4000 miles per year hauling 100,000 tons of coal during that time. A BP pinion in this service gave 100 per cent. results for a period of five years, and was not entirely worn out when removed.

Item	System	Minimum Voltage on			Per Cent. Rated Output at Min. Voltage		
		Hauling Locomotives	Gathering Locomotives	Machines	Hauling Locomotives	Gathering Locomotives	Machines
(A) 4/0 trolley	1 500,000 circ.mil. feeder	155	126.2	126.2	62.0	50.5	55.0
(B) 55 lb. rail	no feeder						
(B) 55 lb. rail	1 500,000 circ.mil. feeder	200	171.2	171.2	80.0	68.5	74.5
(C) Motor-generator set at parting		216	232.8	220.0	86.5	100.0	100.0
Alternating-current cutting machines							

Voltage on top, 275; voltage on bottom, 250; entry to face 2/0 trolley and 20 lb. rail, one rail bonded; rated voltage of locomotive motors, 230; rated voltage of machine motors, 220.

COAL AGE

PUBLISHED BY MCGRAW-HILL COMPANY, INC.
TENTH AV. AT 36TH ST., NEW YORK
Address all communications to COAL AGE

Volume 16

September 25, 1919

Number 13

Proper Ballasting of Mine Tracks

TOO MANY mine managers and foremen seem to put up with the material they have, and to regard the ills they face as inevitable if a remedy is not close at hand. Few things are more deplorable than the condition of the mine tracks where the bottom under the coal is soft or becomes indurated and pasty provided there is enough water to keep it in that condition. There are few places where a good rock ballast—not shale but sandstone or a hard limestone—would fail to improve the roads and so prevent the breakage of electric bonds, the brooming of rails and trip derailments. A suitable rock is, however, not always handy and must be obtained from outside or from strata in the mine well above the coal. At one small mine near Du Bois, Penn., a good curbstone was taken out of the workings, and many other mines there are that have rocks equally massive which would make a good support for the ties when broken to suitable size by a sledge or crusher.

Other mines have no stone within the workings, but lots of hard stone on the surface of the ground. Many years ago a mine at Avondale, Penn., along the Red Bank Creek, made its long mule haulage feasible by using the field stone with which the farms of the neighborhood were covered. The farmers were glad to haul it off their fields to the mine, receiving for it a sum of money which did not pay for the loading, nor indeed for all the cost of hauling, but which satisfied a farmer who had an otherwise idle team of horses that were eating off their heads in the barn, and who had, moreover, a farm having a lower production than normal because of the rock slabs with which it was inconveniently strewn. After building wide and high stone fences and adorning every remaining stump with a cairn of rock, there was still enough stone left to make the sale of it attractive even at a dollar a load, especially if the haul was everywhere down hill.

The stone being tested by years of exposure had every particle of clay and shale with which it had been pitted frozen or washed out. The rock left was durable and well suited for ballasting. Being small, it was, without much breaking, well adapted to tie support.

There are many mines which would have their tracks in better condition if some of the rock brought out or some of the rock readily quarried on the hills were broken by a crusher and used for ballast. The crusher might be installed outside or driven by a motor inside; perhaps the former arrangement would in most cases be best, for it gives more headroom, is convenient to the needs of the whole mine and provides the stone for any outside concreting work or for any highway road-work that may be needed.

In fact there are many parts of the country where the coal mines are the only possible sources of road

metal, and it is a pity that more of it is not produced by that agency, where, indeed, the company charter permits it. When the land is covered with a thick deposit of fine glacial drift or with shale or loess the highroads must be metaled with rock brought a long distance unless some mine arranges to provide the necessary material, which unfortunately it cannot always do.

A crusher, desirable as it is for the making of good tramroad ballast, might not, in some mines, seem to have uses enough to justify its installation, but consideration of its possible uses as a source of stone for road building and concreting, on the property of the company and elsewhere, might quite logically turn the balance in its favor. A crusher with a mill will, moreover, readily make sand for locomotives and also for concrete work. A crusher is a handy tool around almost any coal mine, as in the making of concrete the breaking of stone by hand under a hot sun is a job men do not want, and if they accept it, it is heartbreaking to see with what lack of zeal they go about the work.

Eight hours of work is all too great a strain after a night of gambling, but no healthy man who has had a full eight hours' sleep is unequal to doing a full eight hours of strenuous labor. Whatever hours are to be shortened, no one should undertake to deduct so much as a minute from the eight hours that should always be devoted to recuperative slumber.

Stripped Coal Should Be Carefully Prepared

STRIPPED coal like culm-pile coal is suffering quite a little by the practice, established during the war, of selling all coal in a given district, however impure, at an equal price regardless of its quality. There is some coal with thin covering that is discolored and soft. Such coal, which is stripped at little expense, is not the equal of coal under somewhat heavier cover. This inferior coal can be sold locally for domestic use at less than the regular price. Some persons are recognizing the difference by offering this poorer coal at about one dollar less than the price for coal mined by underground methods.

Coal under somewhat deeper coal is neither discolored nor soft and it does not have to be placed on the market at a lower price than is put on coal mined by regular methods, provided the coal is handled with equal care. There is no reason why it should not have an advantage, as the coal is overmined in the roof instead of undermined in the coal and there is no "bug dust" to be disposed of, as there is no undercut made.

But care must be taken to completely remove the overburden, the top dirt being cleaned away by pick and shovel, and the remainder of the dirt swept off by a wire broom. With such care the overburden does not mix with the coal. An ounce of equal precaution will prevent the bottom also from becoming mixed with the product.

Where, however, the fuel has to be sold in competition with coal that has gone over a picking table or which is washed and crushed and washed again, the stripped coal should be similarly treated. Perhaps it only has to compete with a roughly cleaned product but one which is well screened. In that case care must be taken to size with equal precision the stripped coal.

At quite a few plants in eastern Ohio all these precautions as to picking, crushing and screening are being put into operation. Such plants are more than upholding the value of stripped coal, whereas pits where "everything goes" are destroying its reputation. The prejudice against rusty coal is often not well founded, but, though it may be almost as good as the unstained variety, the market is not willing to grant that as a fact.

The open way in which the coal is mined by stripping gives the miner much advantage in removing impurities. The light of the sun favors more careful inspection of binders and partings, and consequently there are some reasons why the coal should be better, even where not washed or hand picked. If however, it is loaded clean down to the floor by a steam shovel and receives no further treatment, one cannot expect that it will have a good appearance or be free from impurity when it reaches the market.

During the war we deplored the lack of education, technical and other, the first because it hampered the inventive genius needed to win the conflict, the second because the uneducated men made soldiers who were hard to manage and foreigners who lacked comprehension of our government, purposes and language. The war now being over, are we going to starve our technical and other scholastic institutions by inadequate donations on the one hand and insufficient school taxes on the other?

How to Sell Coal Abroad

THE OTHER day a man made his appearance at the offices of *Coal Age* and informed one of the editors that he desired to purchase 20,000 tons of coal for export to France. He openly stated that the firm he represented was a large exporting concern which had hitherto not handled coal at all. When he was asked what kind of coal he desired, and for what purpose it was to be used, he replied that he had no idea at all, as the telegram he had received contained no specifications of any sort. His parties wanted coal, but the nature of the fuel they were seeking they did not take the trouble to indicate.

It is quite possible that there are many people in France and elsewhere who have been in the habit of buying from one special firm for a number of years and feel that the coal which they have been furnished has met their entire requirements, or at least has seemed to meet them satisfactorily.

When they come to deal with a foreign country like the United States, they think that all that is necessary is to send in an order for coal just as they have been in the habit of doing in the past through their French dealer. In that case they may have been accustomed to say not even so much as that the new consignment of coal shall be precisely the same in quality as the one they have been receiving. They have relied on the dealer to see to that.

It will be very hard to deal with people having such an indeterminate idea of their requirements, such as is here indicated. It would appear necessary that an agent should go and visit the plant and find out just exactly the type of coal that they have been receiving in the past, if any business is to be done with them on a satisfactory basis. It will always be very hard

for a small company to do business of this kind abroad, and it will never be able to satisfy the buyer until there is a combination of sellers in the United States that will be large enough to supply agents in Europe to go to the various would-be purchasers and discover the precise type of coal which has been used in the past, or possibly will ascertain what coal will best suit the equipment that the European factory has installed.

There are, of course, a number of purchasers in European countries who clearly understand the nature of the coal that they desire, but they will come only with trepidation into the American market until they know the names of the firms which can supply the kind of coal that they seek, unless they can obtain that coal through an export association with a reputation for good service. We need a classification of coal that will enable the foreign merchant to send in his order telegraphically, merely mentioning the type of fuel and the condition in which it is to be received, whether as run-of-mine, lump, nut, egg or slack. The standardization of coal should therefore be the subject of a careful inquiry. The product of the United States should be classified in a broad, yet practical, manner and the types or classes formed should be named, lettered or numbered as G. H. Ashley, until lately geologist in charge of the Eastern Section of the Coal Fields, of the United States Geological Survey, has already tentatively done.

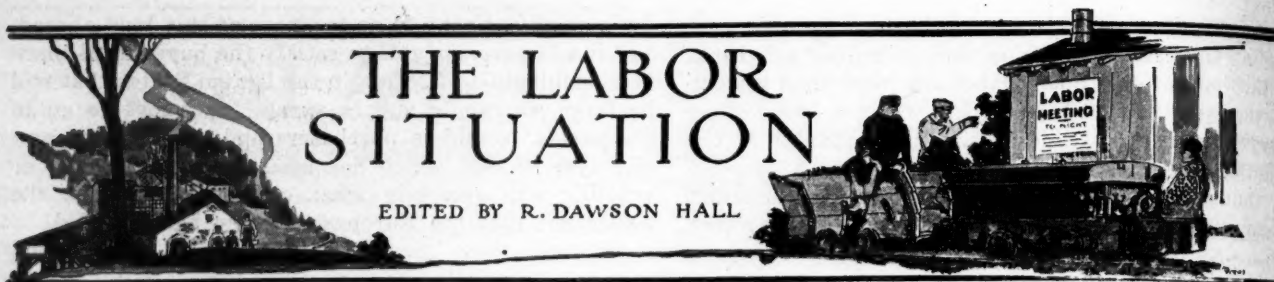
It is absolutely necessary to have a standard, and that standard must be based not on the character of the coal as found at the mine, but on the character of the coal as it is likely to be delivered on the car. It is also necessary to take into careful consideration how the methods of sampling followed by our European purchasers differ from those which are in vogue in this country.

There is rarely a large export demand for a non-standardized article, for such a product can only be sold on previous reputation; and it will be readily understood that where a buyer is not obliged to deal with a foreign merchant he will endeavor in every way to secure his wants at home because of the extreme difficulty of buying from a man at a distance, and from one whose reputation is not established.

Nothing will fix the character of the American coal producer so much as a strong export association having an absolutely fearless inspectional service and one that will see that the coal is in every way up to specification, as to analysis, thermal value and temperature of ash fusibility.

In this country it has been found extremely difficult to ship apples across the continent, or for any great distance, except where there was a large degree of standardization and unless the producers of the fruit were protected against the unscrupulous by a large producers' association that would guarantee that the apples shipped would be in accordance with standards, or would at least maintain the reputation that the field had gained as a result of careful inspection of its product.

What is necessary when selling apples within the confines of America is needed with regard to coal when it must be shipped abroad. The operators must combine not so much to fight the combination of foreign buyers as to be able to go to them with an adequate selling organization backed by standardization and integrity. Certainly if we are going to continue our trade in normal times we shall need to make provisions of this character.



General Labor Review

Remarkable is the dilatory conduct of affairs at the meetings of the United Mine Workers of America. "Killing time" seems to be the principal occupation of the delegates. The death of John Mitchell and his funeral had something to do with the delay and so perhaps also had the labor troubles in various parts of the country. But neither of these seem to account adequately for the slowness of the proceedings. The labor leaders have a large amount of work on their hands, not only the meeting with the operators on Sept. 25 at Buffalo, but the big labor conference at Washington on Oct. 6. There is need to clear the boards as soon as possible so as to be ready for other and perhaps more strenuous work.

The President has named the 22 men who are to represent the public at the National Labor Conference and who will serve with 22 labor men and 22 representatives of employers. They are Bernard M. Baruch, of New York, the former chairman of the War Industry Board; Robert S. Brookings, of St. Louis, former chairman of the Price Fixing Committee of that organization; John D. Rockefeller, Jr., Judge Elbert H. Gary, of the United States Steel Corporation, Dr. Charles W. Eliot, president emeritus of Harvard; Charles Edward Russell, of New York; John Spargo, of Vermont; O. E. Endicott, of Xenia, Ohio, president Ohio Farm Bureau Federation; Ward Burgess, of Nebraska; Fuller R. Callaway, La Grange, Ga., a cotton manufacturer; Thomas L. Chadbourne, of New York; Charles G. Dawes, of Chicago; H. B. Endicott, of Milton, Mass.; Paul L. Feiss, of Cleveland; Edwin F. Gay, dean of the Graduate School of Business Administration, Harvard University; George R. James, of Memphis, Tenn.; Thomas D. Jones, of Chicago, Ill.; A. A. Landon, of Buffalo, N. Y.; E. T. Meredith, of Des Moines, Iowa, editor of "Successful Farming"; Gavin McNab, of San Francisco, Cal.; L. D. Sweet of Carbondale, Col. and Louis Titus, of San Francisco.

TWO SOCIALISTS AMONG THE PUBLIC'S CONFEREES

In this list are two socialists, C. E. Russell and John Spargo. The latter during the war resigned as a member of the National Executive Committee of the Socialist party. H. B. Endicott is an officer of the Johnson-Endicott Shoe Co., at Binghamton, N. Y., who has been conspicuous as an arbitrator in Massachusetts labor disputes. Thomas Davis Jones is president of the Mineral Point Zone Co. and a director of the International Harvester Co.

The session of the United Mine Workers of America on Monday, Sept. 15, was of a piece with those preceding it—a mere marking of time. President A. McAndrews of the Tobacco Workers' Union representing that body and also the Label Trade Department of the Federation of Labor addressed the delegates on the importance of buying nothing without noting first whether the union label is attached to the article purchased. He also endeavored to line up the delegates against the reformers, who would rule out tobacco as they had already abolished alcohol. The rest of the day was wasted in a fruitless quarrel about the exclusion of delegates from unions who were under the ban of the administration for violation of contracts.

The quarrel was carried over to the following day, Alex Howat, the president of district 14, Kansas, being the advocate of the contract breakers. His talk made little or no impression, the vote being 1704 to 288 against the seating of the Illinois delegates. Had the insurgent mine

workers been in his district, Mr. Howat would have sustained them. As a result Kansas continually has abortive strikes which keep the men in perpetual penury and do absolutely nothing to raise the wage scale or better conditions for neither Kansas nor Illinois can afford to have such a high scale or such onerous conditions as will shut them out of all markets, but the farmer markets adjacent.

Everyone of the Kansas strikes is a mere battling against a stone wall. It hurts the Kansas miners' hands, without the wall being conscious of the bombardment. The mural environment of the Kansas miners is not a ring of unkindly operators but the encircling pressure of economic law. The price of coal can be put at any level but if put too high the coal will be neither mined nor sold. The Kansas miners are slowly learning that Alex Howat's plan of striking against signed agreements results merely in impoverishment. Harry Fishwick, vice-president of district No. 12, Illinois, declared himself ready to prosecute any one who alleged that money had been misappropriated by the Illinois district union.

INTERNATIONAL MINE WORKERS MARK TIME

To keep the crowd interested, Miss Rose Sullivan organizer of the Telephone Operators' Union spoke in the afternoon, as did also Mother Jones who came to present the cause of the steel workers. The "Fraternal delegates" Martin J. Flyzik and Lee Hall, then gave an account of their trip to the convention of the International Union of Mine, Mill and Smelter Workers, at which convention W. D. Ryan, of the United States Bureau of Mines, and E. P. Marsh, Labor Mediator of the Federal Government, both took part. The delegates emphasized the community of interest and sentiment between metal- and coal-mine workers but did not definitely recommend amalgamation.

A memorial service in honor of John Mitchell was held at St. John's Cathedral, in Cleveland, at 8 a.m. Tuesday, the 2000 delegates marching from the convention hall to the cathedral.

On Sept. 17 the question of a continuance of the affiliation with the American Federation of Labor arose. Those who were backing the separation were not merely seeking that the miners' union should "paddle its own canoe," but sought to amalgamate the United Mine Workers' organization with the "One Big Union," which is practically the same as the Industrial Workers of the World. The radicals in the union regarded the matter as a determining element. If they could break with the American Federation of Labor, they felt that they could ally themselves with the advocates of "direct action" and the "universal strike." A rupture with the A. F. L. meant a recognition of Bolshevism by the United Mine Workers of America.

MINE WORKERS SUSTAIN AMERICAN FEDERATION

The resolution was introduced by the local union of Washoe, Mont., where the I. W. W. are more than ordinarily strong. The first part of the resolution found fault with the salary of Samuel Gompers, which is \$10,000 a year. Delegate Morgan, of Illinois, said the services of that notable were "not worth the money." The chairman of the resolutions committee said that any corporation would pay Gompers five times as much for such abilities as he possessed.

When Secretary Green defended the A. F. L. he shouted to the convention, "Will we withdraw?" "No!" was the deafening reply. There was doubt how the convention

stood. Secretary Green said that Mr. Gompers had protested against the salary given him and said on the floor of the A. F. L. convention that, "it will be misunderstood and misinterpreted." "Despite that," said Mr. Green, "the delegates voted President Gompers the salary, although he did not want to take it."

But why continue the story of these sessions through the maze of their inconsequence. On Friday, Sept. 19 an amendment to the Constitution was made, under which the six-hour day, instead of the eight-hour day, was made one of the aims of the organization. It would be absurd to specify in the Constitution that eight hours was the goal when the union was endeavoring to press for a six-hour day.

"TAKE IT OR LEAVE IT" IS TO BE THE DICTUM

The mine workers believe that the pressure of the operators and the public will compel the representatives of the union to modify the demands when the scale conference comes about. They are determined that their representatives shall be steeled against argument, public wrath and conscientious scruples by instructions of the convention to the effect that the operators will have to agree to all the demands laid down. If the purpose of the convention materializes in a resolution it will forbid the union leaders to accept anything less than all that is demanded when the final tentative wage scale is made.

The strike in the northern anthracite region, as was reported last week, came at last to an end. On Sept. 14 the mine workers of the Delaware, Lackawanna and Western R.R., Coal Department, refused even to listen to National Organizer D. M. Fowler and Board Member James Gleason, who represented the administration of District No. 1. The men thus discourteously dismissed declared that they would ask for the revocation of the charters of the locals on the ground that they had left the mines for an illegal strike, and then would not listen to the arguments of those who sought their return.

But on the following morning, Sept. 15, the Hudson Coal Co.'s men all returned to work, agreeing to submit their grievances through the district president. The D., L. & W. men's strike was started more or less out of sympathy with the Hudson company's men, and now the original strikers had returned to work and their sympathetic friends were out on strike, and, what was more, had just begun to feel fine and fit. They had just dismissed the union envoys when the discouraging news came.

Confidence gave way to dejection. The union had won in that part of the region where it was really weakest. The most bitter of the insurgents had collapsed, and the strike was lost. On Sept. 17 the D., L. & W. mine workers went back to work. The new grievance committees are insurgent bodies that bode only harm for the mine workers.

CORNWELL TO QUIZZ BOTH OPERATORS AND MEN

While an investigation is to be made of conditions in the Guyan field, about which so much has been said by United Mine Workers, there is at the same time to be an inquiry equally thorough to determine and fix the responsibility for the assembling of a mob of armed men and for the leading of them toward the Guyan coal field. This was indicated by Governor John J. Cornwell of West Virginia in a telegram sent by him to Acting President John L. Lewis, of the United Mine Workers at Cleveland on Sept. 11, in reply to a telegram received from Mr. Lewis. While the United Mine Workers insist upon an investigation of Logan conditions it will be observed that so far as any official request goes they are fighting shy of an investigation of the uprising organized in the Kanawha region during the first week of September.

Mr. Lewis telegraphed Governor Cornwell from Cleveland, Ohio, Sept. 10, 1919: "The International Organization of the United Mine Workers of America joins President C. F. Keeney of District 17 in demanding that an investigation of the conditions and treatment of the miners of the Guyan Coal Fields be made at once."

Governor Cornwell's response on the same day was as follows: "Replying to your wire of the 10th; on the ninth inst. I wrote President Keeney a letter advising him of my

intention to promptly institute such an investigation as you suggest in order that he and your organization might be prepared to assist. On the same afternoon I told him personally of my intention and that the letter had gone to him. That investigation will be thorough, and coupled with it will be an investigation equally thorough, to determine and fix the responsibility for the assembling of a mob of armed men and their march toward the Guyan coal field, which narrowly escaped precipitating a conflict in which hundreds of men would have been killed.

On Tuesday, Sept. 16, Governor Cornwell announced that the investigation into conditions in the Guyan field and into the armed invasion from the Kanawha field would start Monday, Sept. 22, Mayor Thomas B. Davis, acting adjutant general and former chief of the Huntington Fire Department, being the investigator. Col. George S. Wallace, a Huntington attorney will assist him and examine all witnesses.

The Governor has stated "It is not my desire to make anything spectacular out of the investigation. On the other hand, I hope its progress will quiet rather than disturb the situation. Its purpose is to remove whatever is unlawful, unfair, unjust, whoever may be responsible for it."

TO LOOK INTO SLUGGING, MINE GUARDS AND WAGES

In directing Major Davis to conduct the investigation, Governor Cornwell outlined the scope of such investigation in the following letter:

Confirming my personal instructions to you, I desire that, commencing on Monday next, Sept. 22, at 10:30 a.m. you begin an investigation of the following matters:

1. The charges made in the public press and in public addresses by officers and agents of the United Mine Workers Organization that the coal operators in the Guyan field are employing armed guards; that said alleged guards are or have been beating, slugging and maltreating the workers and other persons in said coal field; that men are kept in the mines by threats and intimidation; that their rates of pay are below that at mines in union fields and that their living conditions are infinitely worse; that a large majority of the workmen in the field desire to join the "union" but are forcibly prevented from doing so.

"In addition to investigating the foregoing charges which have been made publicly and to me, personally, I desire to know whether the guards, if any, have in any way violated the laws of the state or infringed upon the rights of any law-abiding person or persons, as well as to ascertain from competent witnesses or otherwise, the facts as to the labor and industrial conditions and practices in said coal field as well as the living conditions and rates of pay, as compared with the rates of pay in other coal fields of the state where the natural conditions are in general similar to those in the Guyan region.

TO FIND OUT WHO STARTED KANAWHA "ARMY"

- "2. To investigate and if possible ascertain and fix the responsibility for the assembling of several hundred armed men, miners from District 17, who, on Saturday, Sept. 6, marched from a point on Lens Creek, Kanawha County, to Coal River, Boone County, returning on special trains, Sunday, Sept. 7, and whose purpose, as stated, was to invade the said Guyan coal fields.

"While you are to conduct and control the investigation and determine where sittings are to be held and the competency of all witnesses, I have secured the services of Col. Geo. S. Wallace, whose duty it will be to conduct all inquiries of witnesses. While it is absolutely necessary that the investigation be full and complete, regardless of where it may lead, it is equally important that the record be not encumbered with hearsay testimony or with extraneous or irrelevant statements. Facts and not opinions are what I am seeking. Statements should be as brief as possible and confined to the matters at issue. The record, as made up, will be a public document and it should not be unnecessarily large.

"The United Mine Worker officials, the coal operators or other interested persons, should be invited to present witnesses and to submit to Col. Wallace information as

to what is expected to be proven by each, in order that he may be in a position to propound questions, but inasmuch as this is an investigation by and on behalf of the state all inquiries should be made by him. There being no plaintiff and no defendant it would manifestly be improper and impossible to allow attorneys representing persons other than the state to conduct the examination of witnesses and to cross examine them. Such a method would lead so far afield that the investigation would be worthless.

"I am depending upon the well-known ability, courage and character of Colonel Wallace to obtain all the facts from all witnesses presented to or found by you without fear or favor and at the same time to keep out of the record such things as do not properly concern this investigation. I suggest your first sitting be held in Charleston on the date mentioned.

"You are authorized to secure a competent and reliable stenographer to do the work—a court stenographer if possible. Copies of this letter are being sent to Colonel Wallace as well as to Frank Keeney, and the Guyan Operators Association."

STRIKES WHERE WAGES HAVE BEEN LOWERED

Differences having arisen between operators and miners in the New River field as to the construction of the new contract which became effective on Sept. 1, the executive committee of the New River Coal Operators Association met at Charleston during the third week of September for the purpose of ironing out some of the grievances. The miners at three or four plants in the district have been on strike since the new agreement became effective. It is believed, however, that the differences between the companies and their employees will be adjusted and that the men will be able to return to work, as a result of the meeting of the executive committee of the association.

About 400 miners have been on strike at Jodie in the New River field, the strike growing out of a reduction in the price per ton paid miners under the recently adopted wage contract which supersedes the old contract on Sept. 1. Officials of District 29 claim that the reduction is a violation of the new wage contract, in that the new contract provided that there should be no increases or decreases in wages, pending the adoption of a new contract in the Central Competitive region.

DESPITE NEW RESTRICTIVE CLAUSES, MEN STRIKE

As the new contract provides for a penalty in the event of strikes, it is contended by officials of the New River Coal Operators Association that inasmuch as the operators at both Jodie and Wright, where the strikes have occurred, are parties to the contract, the men are violating their pledged word in not returning to work. The officials of District 29 are also found in fault for countenancing the strike of the miners. The price per ton paid under the old contract, according to officials of the mine workers' organization, was \$1.20. Under the new contract the wage per ton, it is claimed, is only 59c.

It is to iron out such differences that the Executive Committee of the New River Coal Operators Association has been holding a meeting. Interpretation of the new wage contract, as it applies to the mining of low coal so as to prevent any reduction of wages in the thin-vein section, may be agreed upon, and it is therefore likely that most of the plants in the thin-vein section will soon be in operation again. It is proposed to meet the situation by the payment of a differential to such miners as are engaged in mining low-grade coal.

While the prospect of an early settlement of differences between the operators and miners in the thin-vein territory of the New River field is reasonably bright, there is no prospect that those operators who withdrew from the New River association, rather than operate their mines on a "closed shop" basis, will make a concession on that matter and thus pacify the union miners who immediately went on strike at such operations. Operators who refused to accept the "closed shop" produce about 10 per cent. of the tonnage of the New River field. Since Sept. 2 their mines have been for the most part idle. No attempt has been

made by their owners to operate them, at least insofar as the union miners are concerned.

The operators propose to secure full crews of nonunion miners, offering a slight advance in wages as compared with the rest of the field, so as to be able to run the mines at the usual capacity when they resume operations. Even the electric power plant is closed down at the mines of the McKell Coal & Coke Co., and both Glen Jean and Kilsyth are in total darkness. The operators at the McKell plant and elsewhere indicate that they will under no circumstances give in and that while union miners are welcome to work at their plants if they desire, they do not on the other hand propose to have the organization of miners dictate who they shall or shall not employ nor do they propose to permit any discrimination.

SOME REFUSE TO CONCEDE THE CLOSED SHOP

No labor troubles exist anywhere in the northern West Virginia fields except at Mabie in the Randolph field where the miners of the J. B. Jenkins Coal & Coke Co. are striking as a result of the refusal of the company to put its mines on a "closed-shop" basis. This the company states it will under no circumstances do, and that the mines will continue to remain closed down until they can be operated as an "open shop." Both sides appear to be equally obdurate.

The general consensus of opinion in West Virginia is that there will have to be a "show-down" when the miners present their demand for a five-day week and a six-hour day. While there has been no general expression of opinion among producers and while operators have not said in so many words that they will close down their plants before they accede to such a demand, their general disposition is nevertheless to meet the issue and to close down rather than give in to such a preposterous demand. It is believed that if the mines are closed down public sentiment will force the miners to recede from their position, for production will entirely cease.

Illinois insurgents are continuing spasmodically their hopeless resistance against the authority of their organization. The "armies" which expected to "pull out" the loyal miners have demobilized, or rather disintegrated, but the leaders of the insurgent faction are doing their best to keep the fires of revolt burning. "Mass meetings" are held on slight provocation and under the influence of heated oratory the miners resolve to keep up the fight and go forth the next day to this mine or that and try to get the workers to quit.

The workers, to avoid clashing with their misguided brothers, usually resort to subterfuge. If they know the strikers are coming they are not at work when the delegation arrives. It has been found expedient to shut down for the day. If the mine is working some of the men respond to the appeals of the strikers and go home, only to return to work in a day or two. No permanent results are accomplished by the insurgents anywhere.

UNION HAS 13 RIOTOUS INSURGENTS ARRESTED

The workers are getting out of patience and when a band of strikers intercepted the workers on their way to Consolidated Mine No. 17 at Collinsville Monday morning, they went back home rather than have a clash, but warrants were sworn out against 13 of the insurgents, charging them with intimidation with intent to incite a riot. The officials of the United Mine Workers are behind the action taken, and Mose Johnson, member of the State Executive Board, announces that the prosecutions will be pushed.

New locals are being organized by loyal miners to take the places of those whose charters were revoked by State President Farrington under authority of the International organization. The unfavorable action taken at Cleveland against the insurgents has put the finishing touch to the débacle of their ill-advised revolt.

Advices from Birmingham, Ala., on going to press were to the effect that 10,000 coal mine workers employed by steel companies in that region were likely to be idle on Oct. 1 when the steel strike commenced.



DISCUSSION *by* READERS

EDITED BY JAMES T. BEARD

Safety in Mine Timbering

Letter No. 5—While traveling through an airway a short time ago, I came suddenly to a full stop where a large fall of roof had occurred that blocked my passage. It was plain to be seen that the timbers were not broken but had simply given way. I said to myself, These timbers have been put up wrong or this would not have happened. Upon examination, I found that the fall had knocked out about six sets of timber. Neither the crossbars nor the legs that had supported them were broken, but were lying more or less covered with the mass of slate that had fallen.

Sitting down a few moments to study over the matter, I concluded that the sole cause of the trouble lay in the fact that the bottom was soft, too soft to resist the pressure of the legs resting on it. I said, if this could occur on an airway the same might take place, at any time, on the haulage road and block the mine. My conclusion was that this was a wrong method of timbering under these conditions.

Again, I thought, how many men have been caught on haulage roads and crushed between the car and the legs of a timber set, and how many drivers have been killed by a fall of roof when a derailed car has knocked out one or more sets of timber, to say nothing of the delay caused by the accident.

In this connection, therefore, allow me to suggest a system of timbering that is particularly adapted for



SUPPORTING COLLAR BEAMS ON HAULAGE ROADS

the support of roof over haulage roads. The system I am about to mention requires no legs to support the crossbars and gives no opportunity for men to be caught between the car and a timber standing at the side of the road, or for a derailed car to knock out timbers and cause a fall of roof and, perhaps, a fatal accident.

The system I have in mind is one that I have used successfully in the old country. It does not require the cutting of hitches in the ribs to support the bars. On the other hand, it is a simple and inexpensive method that can be quickly applied. I have known one man to do the entire work alone and accomplish as much as two men would do by the old system of framing timber sets and setting them in place, or by cutting hitches in the ribs for the support of the bars.

The accompanying sketch shows clearly my method. It will be observed that the crossbar is supported on two I-beams running parallel with the entry. These, in turn, are held up or laid over iron plugs, which are driven into holes bored in the ribs, about 3 ft. apart.

The iron plugs are 2½-in. bar iron and, as shown in the sketch, are slightly upset on the ends, to prevent the I-beams from slipping off the plugs. The holes are drilled about 18 in. or 2 ft. into the ribs. The depth of the hole and size of bar required will depend on the nature of the roof to be supported and the hardness of the coal. The plugs are driven into the hole and tightly wedged.

My experience with this system of timbering is that it is much more quickly done and costs less, since no legs are required and there is no framing or jointing of the timbers necessary. The holes are quickly bored with an ordinary coal drill, and the method is well adapted to conditions where the coal is hard and the bottom soft. As shown in the figure, the crossbars are wedged against the roof or lagging is used when that is necessary. I have often found that material for the plugs can be taken from the scrapheap and much of that utilized to a good purpose.

J. RILEY.

Universal, Ind.

Problem in Coal Extraction

Letter No. 4—After carefully reading the article describing the process employed for the extraction of coal in a certain mine where but 50 per cent. of the coal was taken out, *Coal Age*, Aug. 7, p. 234, it would appear to me, judging from my own experience in working thick seams of coal, that the aim in this case has been to obtain a large percentage of coal in the first working of the mine or, in other words, when forming the panels and driving the rooms.

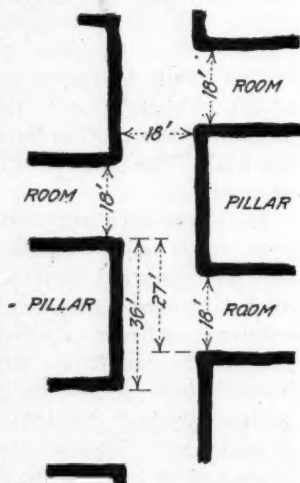
The conditions described in this article are such as to cause little wonder that but a small percentage of the coal was recovered. It is customary, in this district, to speak of mine-pillars as "ribs," and this term would describe more accurately the so-called pillars mentioned in this article as being left for the support of the roof while driving the rooms to the limit. As I have just remarked, it is only what might be naturally expected that only a small portion of these ribs could be recovered in the work of robbing.

LARGE PILLARS REQUIRED IN ORDER TO SECURE A GOOD PERCENTAGE OF RECOVERY

It is a well recognized fact, in the mining of coal, that the best results, in respect to securing a high percentage of coal extraction and the largest amount of round coal, can only be obtained when the panels are not too large nor the rooms too wide in proportion to the width of the pillars. In the present instance, the dimensions given as 1565 ft. between cross-entries and 520 ft. between headings show large panels that will require too long a period of time to open up and drive rooms with the assurance or promise of a good recovery of pillar coal. Especially is this true with the soft fireclay bottom here described.

As a remedy, under these conditions, allow me to suggest that the panels be formed by driving the cross-entries so as to leave a block of coal 1000 ft. in width, while the headings are driven single and 418 ft. center to center. All headings and rooms should be driven 18 ft. wide. By this arrangement, the rooms will be only 200 ft. in depth and the room pillars should be twice the width of the rooms or 36 ft. wide.

I have said that the headings should be driven single and have a width of 18 ft. The rooms on either side of the heading should be driven from 18 to 27 ft. in advance of each other, as shown in the accompanying sketch. Also, the breakthroughs in the rooms should be staggered in the same manner, which arrangement will give a much better support to the roof, under the conditions mentioned, and largely eliminate the risk or danger of squeeze. I believe that the coal in the panels can then be extracted in less than half the time required by the present system.



STAGGERING ROOMS ON SINGLE HEADING

When starting to draw back pillars, the arrangement I suggest will probably be found to afford a practically solid roof. The pillars will not be crushed, and it is my belief that a much larger percentage of total extraction will result and the coal mined in a better condition. Regarding the statement that the fireclay floor is very soft in places, it is impossible to say definitely what is the best method to pursue in that case, but I would suggest leaving the bottom coal in the first working. This would not only permit of the use of shorter props, but give a better floor and keep the fireclay dry. The bottom coal can be wholly recovered when drawing back the pillars.

Referring to the natural cleavage planes claimed to exist in the top coal and roof and extending north and south, I do not think a better plan could be adopted than that mentioned of driving the rooms east and west to avoid the possibility of heavy roof falls.

McKeesport, Penn.

ANDREW O. BAIN.

Letter No. 5—Having given some considerable time and thought to the reading of the article on this subject that appeared in *Coal Age*, Aug 7, p. 234, I beg to express an opinion as to the causes that prevented the extraction of more than, as stated, 50 per cent. of the coal by the method employed, and to suggest a plan by which, I believe, 90 per cent., more or less, of the coal can be taken out.

To begin, let me say it is my humble opinion that too much coal was extracted in the first working. In order to obtain a larger percentage of good merchantable coal, the aim should be to take out as little as possible in the first working and leave pillars large enough to prevent any movement in the overlying strata and avoid crushing the coal remaining in the pillars. In other words, let the chief aim be to lay out the work in large pillars, by driving stalls 12 or

18 ft. in width as indicated in the general plan shown in Fig. 1, and depend on the working out of these pillars as the main source of production.

If the seam has any inclination, it is well to remember that the weight on the pillars always starts on the rise side. In working out the pillars, therefore, care must be taken to conduct the work so as to throw this weight off the pillars and have it rest in the goaf or waste. When due consideration is given to this feature, a higher percentage of extraction will result. Though it may cause a slight increase in the cost of haulage, it will always provide a greater degree of safety and less timber will be required to support the roof.

Because of the nature of the overlying strata, which is described as containing slips and disintegrating readily when exposed to the air, I would leave up the top coal, in the first working, and recover this when working out the pillars. To my mind, the cutting action of the roof is greatly aggravated, in the present method, by attempting too large an extraction in the first working. The surest means of avoiding these results is to secure a good clean fall of roof in the waste so as to relieve the pressure on the pillars; and, by splitting the air, reduce the velocity of the current to a minimum. A well-regulated ventilating system is of the utmost importance in this connection. It appears to me that the so-called "modified-panel system" has been adopted, in this mine, more for the purpose of securing quickly a large extraction of coal than to avoid trouble from gas or spontaneous combustion. It is stated that the present method "develops squeeze," which is always a dangerous condition, besides causing a large loss of coal. It is a wonder to me that, in working a thick seam of coal (8 to 11 ft.), at this depth (450 to 600 ft.), the system employed would allow even 50 per cent. of recovery.

Let me say, here, that the coal left in the pillars is not only lost, but is one of the chief causes of the present trouble, by reason of its throwing the weight onto the pillars and crushing them. This is wholly avoided in the method I suggest and surface damage is reduced to a minimum. Where the weight is thrown back in the waste, not only is the pressure relieved on the pillars, but a tilting action is set up in the overlying strata and the break arches over long before it reaches the surface.

The use of only 100 props in rooms necked 18 ft. wide and driven a depth of 260 ft. would indicate, to my mind, an exceptionally good roof, notwithstanding the statement to the contrary. The appearance of gas in this mine several days after a squeeze had started looks as though this gas came from strata higher up in the formation, which was not released when the squeeze first started. Therefore, I conclude that, by avoiding the occurrence of a squeeze, no trouble may be expected from gas. This field is said to be unionized, so that only 14 men are allowed behind a breast machine and

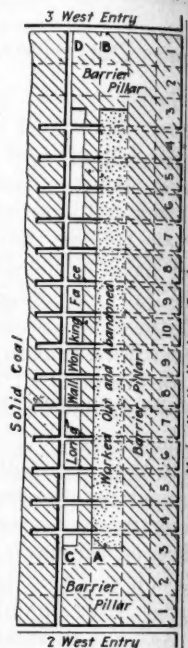


FIG. 1. SHOWING GENERAL PLAN OF PANELS

20 men behind a shortwall machine. Such a condition, however, does not offer any objection to the method I have in mind and will now describe more fully.

Referring again to the figure, it will be observed that I have increased the distance between the west cross-entries, from 1565 ft. to 2280 ft., which will provide space for 19 pillars and 18 stalls driven 12 or 18 ft. in width (I prefer 12 ft.) and about 120 ft., center to center, thus blocking out the coal in square pillars 100 ft. on a side, more or less, and separated by narrow roads or stalls. In this system, the north and south openings will be used as haulage roads, while the east and west openings are rooms.

As shown in the figure, I would leave two lines of these pillars of solid coal to protect the main-north haulage road and $2\frac{1}{2}$ pillars along the west entries, although a pillar only 110 ft. wide is shown on these entries, in the present plan. Time may prove that it will be necessary to leave only one and one half pillars along the west entries. Also, it may be found that the stalls and headings can be driven the full width of 18 ft., as suggested instead of 12 ft. wide.

When the stalls or rooms of the main entry have advanced to a point just beyond the third line of pillars, and the heading marked AB in the figure is opened through from the 2-W to the 3-W entry, switches are laid on this heading, running back into each stall and branched to the right and left so as to reach about 50 ft. of longwall face on each side of the stall.

From the sketch, it will be observed there are 14 stalls opened between the 2-W and 3-W entries, and seven of these stalls will furnish the coal hauled on each of the entries. This arrangement will give two working faces, one on the right and the other on the left of each stall, thus providing 14 working places to be cut by one machine, which conforms to the union regulations and yet permits two men to load coal in one place while another place is being cut.

In the figure, the third line of pillars is shown as worked out and abandoned, and the fourth line of pillars is being drawn back and the coal from these pillars hauled out on the road CD. In this manner, each line of pillars is worked out successively until the cross-entries reach the boundary, when the work of drawing back the entry stumps and barrier pillars is started and carried on in the usual manner.

Better results will always be obtained by keeping the longwall face in each line of pillars practically

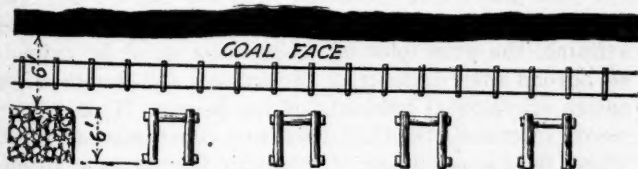


FIG. 2. SHOWING TIMBER COGS ON LONGWALL FACE

straight, as this will reduce the tendency to crush the ends of any pillars that might fall behind, besides providing better ventilation. The top coal is taken down as the longwall face is retreated. A line of cogs should be kept a short distance behind the face, as shown in Fig. 2, allowing only room sufficient to cut and load the coal. These cogs are taken out and reset one by one as the work along the face proceeds. My plan would be to leave up the top coal while working off each slice on a 50-ft. face, and then bring back this top coal

as the cogs are drawn and reset to take its place. Only sufficient top coal should be taken down at one time to make a day's loading.

Allow me to say, in closing, that this system has many features common to the working of most coal seams, and is one that I believe is adapted to overcoming the difficulties presented in the problem before us. This is not to say, however, but that there is ample scope for improvement and modification to suit certain conditions. I am fully convinced that practically 90 per cent. of the coal can be recovered by this method.

Linton, Ind.

W. H. LUXTON.

Markers on Mine Trips

Letter No. 2—Replying to the inquiry of J. J. S., *Coal Age*, Aug. 28, p. 379, asking for a general discussion in regard to the relative merits of tripmarkers, permit me to endorse this request and to say that there is no more important subject connected with mine haulage than that relating to a good marker on mine trips that will alarm men who are compelled to travel a haulage road.

Before going further, however, allow me to remark that it is difficult to imagine a modern mine using a steam locomotive underground, today, even allowing that ample provision is made for the carrying off of the gases and smoke produced by the engine. Also, all up-to-date mines now provide a good clearance on one side of a haulage road that men are compelled to travel when going to and from their work. This is made a provision of most state mining laws and is one of the requirements of the West Virginia law, which also prohibits the use of a steam locomotive, except under certain conditions approved by the mine inspector.

CLEARANCE AT SIDE OF HAULAGE ROADS AND REFUGE HOLES REQUIRED

It would appear from the reading of this inquiry that the mine in question has no separate travelingway, and the men are compelled to pass in and out on the haulage road in going to and returning from their work. In cases where it is impossible or impracticable to provide a good clearance at the side of the track, to enable men to pass moving cars with safety, the absence of refuge holes cut in the rib would be inexcusable. The holes should be whitewashed both on the rib and overhead so that they can be easily distinguished at a distance of 30 or 40 ft.

Now, in reference to tripmarkers, I prefer a good carbide light that is provided with a reflector, which should always be kept clean. In my opinion, there is no better device for warning men of the approach of a trip than a carbide triplamp. It can always be depended on as such a light can be seen further than a noise can be heard. I believe that a properly constructed triplamp is the most popular means in use for alarming men of the approach of trips on haulage roads.

It is true that no light can be seen around a sharp curve or bend in the road; but, even so, the cars can be heard as quickly as an alarm gong of any description. I would especially recommend that a good clearance be provided for several yards at either end of a sharp bend or where a road takes an abrupt turn. Either this, or manholes should be cut in the rib 60 ft. apart. If it is a very dangerous curve, where the derailment of a car may be expected to occur at any time,

a good light should be provided and kept burning at that point.

ELECTRIC HORN OR SIREN FOR MINE LOCOMOTIVES

The suggestion of a horn to alarm men of the approach of a mine trip appeals to me as a good one, although I have never seen a horn in use in a mine. A good electric siren suitable for this purpose was advertised recently in *Coal Age*. In this discussion, it is proper to assume that any alarm in the form of a horn or siren would be placed at the head end of the trip, as it would be of little avail at the rear end where the usual marker is a good strong light such as I have suggested. It may be remarked, however, that every electric, compressed air or gasoline mine locomotive is provided with both a light and an alarm gong to give warning of its approach. Like the correspondent, J. J. S., I hope to see some good suggestions offered along this line.

W. H. NOONE.

Thomas, W. Va.

Labor and Democracy

Letter No. 2—The subject of Labor and Democracy introduced by "Economist," in his letter, *Coal Age*, July 10, p. 72, is one that should arouse the interest of all who desire the welfare of industry. The tendency prevails to treat with suspicion, and often ridicule, anything requiring the practice of absolute truth in the common affairs of life. But reason compels us to admit that such a course is superficial and obstructive to industrial progress. The necessities of industry, in respect to the relation of its many branches to each other, require candor to insure successful progress.

Present industrial conditions are just what we have willed them to be, which means that we have the power to make them otherwise. It follows naturally that in searching for industrial progress, there must be a change of thought and a just conception of the intimate relation of its essential factors. We must cease tinkering with trivialities that serve no real purpose and adopt clean business methods instead of following the dictates of selfish personal interests. If we were willing to admit responsibility for the present unsatisfactory conditions existing in the industrial world, our excuse would be that they emanate from the fear that truth and candor would have stood in the way of our own personal interests.

The essential point in "Economist's" letter, to which I have referred, consists in his suggestion that "a carefully thought out and well formulated plan for the democratization of industry will be helpful." His letter is suggestive of the need of an early practical consideration of measures that will reconcile conflicting interests and secure the coöperation of capital and labor. This need is made clear by writers of recognized authority on political economy. When the principles of true economics are properly understood there is no industrial problem incapable of solution if those principles are honestly applied.

Economically, the functions of capital and labor are so interwoven that we cannot truly consider their interests apart from each other. The arguing of differences between employer and employed from the standpoint of either must always be confusing. The selfish interests of both parties to a transaction must be exchanged for a common one, which considers the general

welfare of the industry. Wealth is produced by labor, and capital is a portion of wealth applied to the production of greater wealth through the agency of labor. Thus, capital and labor are collective agencies in producing wealth.

There are three elements concerned in any industrial undertaking; namely, a fair interest on the capital invested, due compensation for risk and wages of superintendence. The wages of labor are considered as a portion of the circulating capital. Now, such is the relation between these elements that whatever tends to increase or decrease the profits of capital must, in like manner, affect the wages of labor. The price of commodities is regulated by supply and demand; and, at any time, should the selling price approximate the cost of production a demand for increase of wages in such stringency could only be met from the profits of capital.

To democratize labor would be to reconcile conflicting interests, which involves fairness of dealing on the part of both parties, in a common cause. This naturally requires a complete understanding of all matters relating to the industry, including both the cost of production and the selling price. A candid statement of these factors would form the basis for a fair equalization of all interests concerned.

NEED OF CANDID, STRAIGHTFORWARD DEALING

It is reasonable to assume that both wages for labor and the profits of capital should fluctuate with prices in the market as determined by supply and demand. If then, we are sincerely desirous of reconciling the conflicting interests of capital and labor and placing industry on a safe and sound basis, we should do away with those barriers of deceit and diplomatic evasion on the one hand, and ignorance and incredulity on the other and, in exchange, adopt straightforward and candid methods in every transaction, which should be clearly understood.

In other words, the practical employment of these moral virtues of candor and truthfulness is the only means of reconciling capital and labor in respect to their conflicting interests. Modern thought has thus far been too tolerant of the vicious schemes and practices permitted in most industrial undertakings and which would eventually carry the nation to the verge of destruction.

Referring to the matter of coöperation between capital and labor, the ideal conditions I have suggested cannot be open to modification without its virtues are weakened or destroyed. To be truly effective, to be genuine, the principles of coöperation must be extended beyond their industrial application and embrace the entire commercial interests of the people. This is necessary because other agencies are constantly at work, under false conceptions of economic law, to take an unjust advantage of a situation and appropriate to themselves the fruits of industry by increasing rents, taxation and the price of public utilities. If industrial success is to be attained, these predatory interests must be controlled by the ruling power.

In casting about for means to make industry more productive, it seems as though the unproductive employment of capital and labor should be regarded as a menace to the welfare of industry and society in general and restrained. It will not be denied that there are innumerable institutions and concerns that serve no purpose whatever in the production of wealth, but are maintained at the expense of capital and labor. Such

useless and wasteful institutions are the parasites that feed on the profits of industry and should not be tolerated. In maintaining these, the functions of both capital and labor are diverted from their true purpose and industry harmed.

It will be well to mention, here, that democratization of industry does not contemplate the adoption of the communists' idea that all property and trade belong to and should be controlled by the community at large. This policy has been shown by authorities in economics to be impracticable. There would be no business competition and ambition and progress would be destroyed. Free and healthy competition must be exercised in the employment of capital and labor, as otherwise there would be no incentive for labor, and exertion and indolence would retard production.

President Wilson's statement as quoted in the letter to which I have referred, namely, "We must find another road leading in another direction and to a very different destination," is a virtual admission on the part of the President, that the present industrial situation is not in line for progress and is not based on the principles of economic law. This being true, it is evident that stern measures are necessary to effect the needed change in industry that will bring about the cooperation of labor and capital and, more than all, prevent the misuse of wealth, which is the product of our country's industries.

WILLIAM WESNEDGE.

Ladysmith, B. C., Canada.

Roller Bearings for Mine Cars

Letter No. 1—I am always interested in the references that appear, from time to time, in *Coal Age*, regarding the advantages of improved mine equipment. It seems to me, however, that in no case is the advantage more pronounced than in the use of roller bearings for mine cars. Not long ago some interesting data were given in an inquiry and the discussion that followed regarding the lubrication of mine cars and the facts shown at that time were greatly in favor of roller bearing equipment.

Having had the opportunity of observing results obtained in several mines where heavy mine cars were equipped with roller bearings, let me say that I have yet to find a single failure where this type of bearings has been properly installed and given what little attention they require. Of course, it is assumed that the bearings are well made and of proper material.

Recently, I had occasion to examine some of this class of equipment, in a limestone mine where the service is extremely severe. Inasmuch as the conditions under which the cars were operated in that mine are similar to what is commonly met with in coal mines, the observations I am about to offer will no doubt be of interest to *Coal Age* readers.

The mine car in use was of steel construction throughout, length 10 ft. 6 in. over all; width, 4 ft. 6 in.; length of body, 9 ft. 6 in.; top of car above top of rail, 5 ft.; wheelbase, 36 in., which was the same as the gage of the track on which the cars were operated. The weight of the car was something in excess of 5000 lb. and its capacity, 8 tons of limestone weighing, say 160 lb. per cu. ft., making the total weight of the loaded car about 21,000 lb., 10½ tons. These cars were mounted on trucks equipped with flexible roller bearings con-

tained in a spring-pedestal type of journal box. The journals were 7 in. long and made of 3-in. high-carbon steel.

At the present time the cars are making three trips a day, covering a distance of 3 mi. in 8 hr., which is the record for each car. Two 13-ton Jeffrey locomotives are used on the main haul and two 6-ton Plymouth, gasoline locomotives are employed for gathering the cars. The track arrangements are similar to those in a coal mine, the steepest grade being about 3 per cent. against the loads.

ROLLER BEARINGS STAND UP UNDER SEVERE SERVICE

In the mine, the rooms are 21 ft. high and 40 ft. wide. The stone is blasted and loaded into the cars by means a No. 20 Marion steam shovel equipped with a 1½-yd. dipper. The service, in this respect, was more severe than that in a coal mine where the cars are loaded by hand. Dropping 1½ yd. of limestone into a mine car is considerably more severe than any method used in loading coal in mines. Occasionally, it happens that a rock is blasted that will not fit in the dipper, but must be raised by the teeth on the dipper and dropped into the car. Such a rock may weigh over a thousand pounds and be dropped from a height of 6 or 8 ft., causing a heavy jar and severely testing the car journals and bearings. It is well for these cars that the greater portion of the rock loaded is well broken in that mine.

When loaded, the cars are hauled to the tippie and unloaded in a Woods rotary dump. This installation, at the present time, is not complete; and instead of the cars passing through the dump, as they will later, the empty car is brought back and dropped 150 ft. down a 5 per cent. grade, where it comes to rest with a sudden jar caused by hitting the string of empties standing at the foot of the grade. This arrangement, however, is only temporary, and when the dump is completed the cars will pass through it and return by gravity over a very slight grade.

HAULING CAPACITY OF LOCOMOTIVE MORE THAN DOUBLE

Compare the present work of these motors hauling twenty-five 8-ton cars equipped with flexible roller bearings, with the work previously accomplished when the maximum load hauled was seventeen 5½-ton cars mounted on plain bearings. For example, the load formerly hauled was $17(5\frac{1}{2} + 2) = 127\frac{1}{2}$ tons. At the present time the average load hauled is $25(8 + 2\frac{1}{2}) = 262\frac{1}{2}$ tons, showing that the hauling capacity of the motors has been more than doubled by the use of roller-bearing equipment, employing the same locomotive and hauling over the same track. The figures further show that, at present, each trip brings 200 tons of limestone out of the mine, as compared with 93.5 tons for each trip, formerly.

It should be stated, here, that the spring pedestals of the journals reduce the shock on the bearings and the flexible bearings again absorb more of the shock and prevent its reaching the axles. In other words, there are two cushions between the axle and the load it carries. These and other observed results confirm my opinion that roller bearings are the most effective type of equipment for mine-car use, and I believe this opinion is rapidly growing among practical mining men.

St. Louis, Mo.

RICHARD W. HARRIS.



INQUIRIES OF GENERAL INTEREST

ANSWERED BY JAMES T. BEARD



Heights of Flame Caps

For a number of years, I have been firebossing in mines and was wont to pride myself on being able to estimate with some degree of accuracy the percentage of gas in the mine air, as indicated by the observed height of the flame cap formed in a Davy lamp.

It never occurred to me that there could be any material difference in the results obtained by different firebosses, until I came to compare my own observations with those of a fireboss who used a Wolf lamp.

We found, however, that our estimates were quite different. A cap would appear in his lamp when I could find no trace of gas in my Davy; and when I had a $\frac{1}{4}$ -in. cap, showing 2 per cent. of gas, there would be a cap almost $\frac{1}{2}$ in. in height in the Wolf lamp, which my friend estimated as "3 per cent. of gas." We decided to look the matter up and I am asking *Coal Age* for information that will enable me to correctly estimate percentages of gas from the observed heights of the flame caps appearing in these lamps.

—, Okla.

FIREBOSS.

A close study of a candle flame, or the flame of an oil lamp, will show that it is composed of three zones,

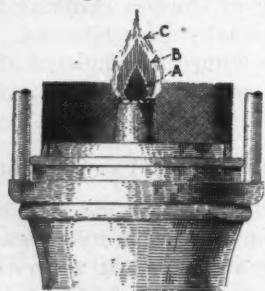


FIG. 1. ILLUSTRATING LAMP FLAMES AND CAPS



as shown in the accompanying Fig. 1. The inner zone A is comparatively small and dark, being composed of the vaporized hydrocarbons of the oil drawn up in the wick and converted into hydrocarbon vapors by the heat of the flame. By the access of air to the flame, the hydrogen

and carbon of these vapors are dissociated and the carbon particles become incandescent in the second zone B, which is highly luminous, while the carbon burns to carbon monoxide and the hydrogen is set free.

As shown in this figure, the zone B is enveloped in a third or outer zone C, which is nonluminous and barely perceptible against the luminous zone B. The outer zone is formed by the burning of the carbon monoxide and hydrogen on coming in contact with the surrounding air, the combustion forming carbon dioxide and water vapor.

When testing for gas, the usual practice is to draw down the flame of the lamp until it is almost extinguished. The height of the flame is then practically $\frac{1}{2}$ in. above the top of the burner, as shown in the lower right-hand corner of Fig. 1. Now, when a volatile oil such as the naphtha burned in a Wolf and other similar lamps is used the heat of the lamp vaporizes the oil so rapidly as to form what has come to be known as

a "fuel cap." This fuel cap is shown in the upper right-hand corner of Fig. 1.

The fuel cap is often mistaken by firebosses for a gas cap, but that is not all. A lamp burning a volatile oil heats more rapidly in gas than one burning a non-volatile oil as sperm, cottonseed or lard oil. The longer the former lamp is exposed to gas, the more its oil is vaporized, which increases the height of flame cap observed and renders the calculation of the percentage of gas present less reliable.

Again, a bonneted lamp is never as reliable for making a test for gas as an unbonneted lamp, since the latter permits a free circulation of air in the combustion chamber, and the formation of the cap is not affected by the products of the combustion, which are much confined in the upper portion of the lamp chimney by the bonnet.

In Fig. 2 is shown the appearance of the lamp flame and the heights of flame caps formed when different

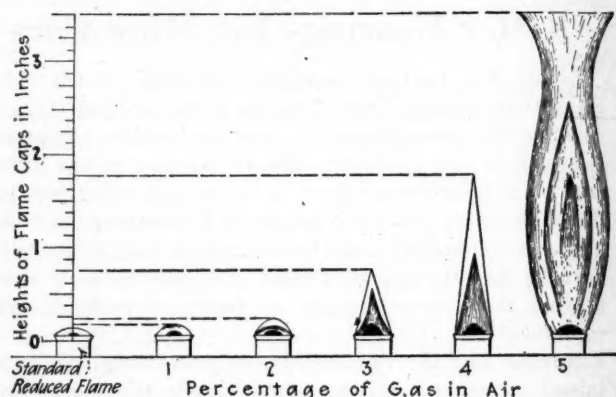


FIG. 2 SHOWING APPEARANCE OF FLAME AND GAS CAPS

percentages of gas are present in the air. These results are what are commonly obtained in the use of an unbonneted Davy burning sperm or cottonseed oil, assuming that other gases than methane are not present, which would slightly modify the heights of the caps formed.

Carbon dioxide present in the air will reduce the height of flame cap for the same percentage of gas; but dust floating in the air will increase both the height of the cap and the volume of the flame. As the percentage of gas is increased beyond the 5 per cent. shown at the right, in Fig. 2, the Davy lamp flames and must be cautiously but promptly withdrawn from the gas to avoid accident.

Approximately, the percentage (J) of gas corresponding to any height (h), in inches, when using an unbonneted Davy lamp burning sperm or cottonseed oil, can be calculated by the formula

$$J = \sqrt[3]{36h}$$

This formula gives, for a flame cap, say, $\frac{1}{2}$ in. high.
 $J = \sqrt[3]{36 \times 0.75} = \sqrt[3]{27} = 3$ per cent. of gas.



EXAMINATION QUESTIONS

ANSWERED BY
JAMES T. BEARD



Anthracite Foremen's Examination, Lykens, Penn., May 6, 1919

(Selected Questions)

Ques.—What are the qualifications of a hoisting engineer; how must he handle his engine when men are being hoisted or lowered into the mine and when must he be on duty?

Ans.—Briefly stated, the qualifications of a hoisting engineer are the following: He must be sober, industrious, observant and exercise every precaution to avoid accidents. He must start and stop his engine promptly in response to signals, taking care not to exceed the limit of speed when hoisting men and to keep his engine under control at all times. He must avoid any risk of overwinding and know the exact position of the cage in the shaft, or the trip in the slope, at any moment of the hoist.

An engineer must converse with no one while in charge of an engine nor allow any one to loiter about the engineroom. In no case must an engineer permit any one to handle the engine while in his charge. He must be on duty 15 or 20 min. before the commencement of his shift and examine all parts of his engine, oiling and making any adjustments that may be necessary, so that nothing will be wanting when the time arrives for him to take charge of the engine.

Ques.—Who must be at the head and foot of shafts and slopes when men are being hoisted or lowered into the mine, and what are his duties?

Ans.—A cager or footman (Art. 12, Rule 40) must be constantly at the foot of every shaft or slope to give the proper signals and to see that the rules of hoisting and lowering men and caging cars are enforced and the work properly done. A headman or trip starter must likewise be stationed at the head of every shaft and slope charged with similar duties at that point. Both headman and footman must be on duty when men begin to descend and remain till all have left the mine.

Ques.—What are the requirements of the mine law in regard to doors and what are their purposes?

Ans.—Art. 10 of the anthracite law requires (Sec. 9) all ventilating doors in a mine to be hung and adjusted so that they will close automatically. All main doors (Sec. 10) must have an attendant to open and close the doors for the passage of men and cars, and to see that the doors do not stand open. Main doors (Sec. 11) must be so placed that when one door is open, another door, in the same opening, will be closed to prevent the short-circuiting of the air current at that point. To prevent against a possible accident to a door in use (Sec. 12), an extra door must be so placed and kept standing open that it will always be ready for use if needed. Unless otherwise permitted, in

writing, by the inspector (Sec. 13), the framework of all main doors must be substantially constructed and set in stone or brick laid in mortar or cement.

Ques.—What is the mine law in regard to explosives? (a) Care of explosives? (b) How shall they be kept in the mine? (c) How should they be handled? (d) What are the rules governing their storage?

Ans.—Art. 12 gives the following rules relating to explosives in mines: (a) Rule 26 prohibits the storage of gunpowder or other explosives in a mine and requires that no workman shall have on hand, at any one time, in any one place, more than one keg or box containing 25 lb. of powder, unless more is required for that person to accomplish one day's work.

(b) Rule 27 requires such explosives to be kept in a wooden or metallic box securely locked. Each box must be kept at least 10 ft. from the tracks wherever such room is available.

(c) Rule 28 requires a miner, when about to open a box containing explosives, or while handling the same in any manner, to first place his lamp not less than 5 ft. away and in such a position that the air current cannot convey sparks toward him. A workman shall not approach nearer than 5 ft. to an open box containing powder while holding a lamp or having a lighted pipe or anything containing fire.

(d) Rule 29 requires that all high explosives other than gunpowder shall be stored, kept, transported, charged and fired in accordance with special rules furnished by the manufacturers of the powder and endorsed with his or their official signature and approved by the owner, operator or superintendent of the mine.

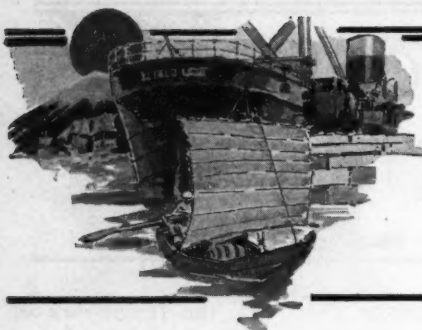
Ques.—(a) What is a safety lamp? (b) What is it used for? (c) What is the principle that makes it safe? (d) When must they be locked and what is the penalty for tampering with the lock of a safety lamp?

Ans.—(a) A safety lamp is a gauze-protected lamp designed to prevent the ignition of any gas that may be present in the air surrounding the lamp.

(b) It is used to enable men to work in mines where the atmosphere is charged with a percentage of gas that would make the use of an open-flame lamp dangerous.

(c) A safety lamp depends on the principle that a flame will not pass through the mesh of a cool wire gauze that is clean and in good condition and the lamp is properly handled. The cool metal of the gauze, by absorbing the heat, extinguishes the flame in contact with it.

(d) Safety lamps must always be locked before being given to workmen. Rule 9 of Art. 12 provides, however, that the mine foreman may give permission to have the lamps used unlocked. The anthracite law appears to provide no special penalty for tampering with locked safety lamps, but states (Rule 58) that failure to comply with the rules will be an "offense against this act."



FOREIGN MARKETS AND EXPORT NEWS

EDITED BY ALEX MOSS



Coal Resources of Germany

Head of U. S. Geological Survey Makes Clear the Fact That Germany Can Meet the Fuel Obligations Imposed on Her by the Peace Treaty

The testimony concerning the export-coal situation given at the recent hearings before the Senate Committee investigating the coal industry left many of the spectators with the impression that after ceding the Silesian and Sarre coal fields Germany would have no coal resources left with which to supply her own needs and to meet the obligations for reparation imposed by the treaty. It is felt that this impression should be corrected, stated George S. Rice, director of the U. S. Geological Survey, in a letter addressed to the Committee. The statements made by the witness were accurate, as far as they went, but they failed to bring out two facts: First, that Germany still has large assets in coal remaining, and, second, that at the same time her assets are reduced her internal liabilities are also reduced by the cession of territory which formerly consumed large amounts of German coal.

The Geological Survey fortunately, for a year past, has been making a special study of foreign mineral deposits and to this preparation for the discussion of just such questions as those before the committee there has been added the knowledge gained on this subject by one of the Survey geologists, F. G. Tryon, while attached to General Headquarters in France. The following statement was prepared by Mr. Tryon:

The coal fields of Germany are shown graphically on the accompanying map. Each column represents the production of one district, the height of the column being proportional to the size of the output. The base of the column is centered in the district. Black columns indicate bituminous coal; shaded columns lignite.

Assuming that the League of Nations should decide to leave the Sarre field permanently in French hands, and assuming

that the impending plebiscite in Upper Silesia results in transferring that field to Poland, Germany would still have the enormous Westphalian coal field and four smaller bituminous fields with an aggregate production of 130,000,000 tons of bituminous coal per annum. In addition she would retain all of her lignite mines, a resource of great importance in German economy though often ignored by outsiders. Her reserves of bituminous coal alone are still the greatest in western Europe and her lignite reserves are very large. She would remain the third coal producer of the world, and it is by no means improbable that within a few years she would outstrip the declining production of Great Britain.

These are the resources from which Germany must make the reparation required by the treaty. Are the resources sufficient?

Before attempting to answer this question it is essential to distinguish between what Germany can do now and what she can do when industrial order is restored within her boundaries. At present Germany, like all the rest of Europe, faces a coal shortage of the most serious proportions. The miners of Westphalia have not been at work; her transportation system is in disorder. It is clear that Germany is far from able to make the reparation payments required by the treaty this year. But if German industry is once rehabilitated and the German people seriously set themselves to perform the obligations of the treaty, the reparation payments in coal can be made.

Without entering into the justice of the settlement and speaking only of the reserves underground and of the physical development of the mines, it is safe to say that if Germany desires to fulfill the treaty

she can fulfill the treaty so far as the clauses concerning coal are concerned.

In the first place the cession of Upper Silesia, if decreed by the plebiscite, will have little effect upon Germany's power to make the coal shipments required. She cedes the field, but she also cedes in German Poland much of the territory which the Silesian field supplied before the war. The coal of Upper Silesia has never been exported by sea. It is consumed in central Europe. It never has been and probably never will be exported to France, Italy and Belgium. The movement of coal is determined by transportation costs, not by political boundaries. Germany has been assured the right to purchase coal from Silesia. Indeed the new Polish and Bohemian owners, to sell their coal at all, must very largely sell it to consumers in Germany. The cession of Upper Silesia would amount, therefore, to a transfer of property rather than a shift in the marketing of coal.

Much the same situation will prevail with respect to the Sarre. A large part of the output of the Sarre mines was consumed locally. Much of it went to France before the war, or to Alsace-Lorraine, now part of France. While a large part of the Sarre coal was shipped to south Germany it is expected that the new French owners will soon find they also must ship to south Germany because that is one of the natural markets for Sarre coal.

The Sarre and Upper Silesian fields thus served a continental market and must, because of the inexorable facts of transportation costs, largely continue to serve the same market. It is from the great Westphalian (Ruhr) field and the small but high-grade Aachen field that Germany must make her reparation payments. The treaty throws upon these two fields the burden of making certain annual payments during the next ten years to Belgium, Luxembourg, Italy and France.

The payments to be made each of these countries will be considered briefly:

Belgium.—The amount required (8,000,000 tons) is practically what Germany furnished Belgium before the war.

Luxembourg.—Germany undertakes to furnish only the amounts supplied before the war.



MAP OF COAL FIELDS OF GERMANY, SHOWING PRODUCTION OF DIFFERENT GRADES OF COAL BY DISTRICTS

Italy.—The amount required by the treaty (4,500,000 tons the first year, increasing to 8,500,000 tons) though far greater than German pre-war shipments to Italy, is still much less than Italy consumes. The principal effect of the provisions will be to give to the Westphalian exporters the lion's share of the former British export trade to Italy.

France.—The treaty specifies a maximum of 27,000,000 tons per year for the first five years and a maximum of 15,000,000 tons for the second five years. The payments consist of a fixed base of 7,000,000 tons plus a decreasing amount which represents the deficit in the production of the devastated mines of the north of France. It must be borne in mind that France's coal requirements have been greatly increased by the return of Alsace-Lorraine and by the occupation of the Saar. The base of 7,000,000 tons fixed by the treaty is actually much less than the shipments of Westphalian and Aachen coal to France and to Alsace-Lorraine before the war.

The shipments prescribed by the treaty to these four powers exceed the pre-war shipments to the same powers by approximately 21,000,000 tons the first year, decreasing to 10,000,000 tons the tenth year. But at the same time the war relieved Germany of some millions of tons of exports to the bunkering stations of the world, a business which has since been largely taken over by England and the United States. This export tonnage can be diverted to meeting the obligations imposed by the treaty. Moreover, the production of the Westphalian field is susceptible of great increase. The reserves are enormous. Before the war the production of this field was increasing at the rate of 7,400,000 tons per year. Without going into details, it is the judgment of Mr. Tryon that if German labor returns to work, normal conditions are restored on the German transportation system, and the German people set themselves to the task of fulfilling the treaty, the reparation payments of coal can be made. The payments may involve a temporary curtailment of internal consumption, but the curtailment need not be nearly as serious as that endured by the German people during, for example, 1915.

Paraguay as a Market for American Coal

There are no manufacturing plants, railways, or other large industries using coal in Paraguay, reports Consul Henry H. Balch, Asuncion, Paraguay, under date of July 10, 1919. Before the war, however, and up to about 1916, some steam coal was used by the Paraguayan Central Railroad Co. Wood obtained from the extensive forests of Paraguay is found to be a cheaper fuel for steam-generating purposes than coal that has to be brought from the United States or from Europe. For cooking purposes locally burned charcoal is used almost exclusively.

It is estimated that about 600 tons of forge coal and 400 tons of coke are consumed here annually. At the present time, on account of the high prices, the sale is limited. In this market coke is selling at 2500 pesos and forge coal at 2000 pesos per ton. (The Paraguayan peso is now worth about \$0.055 American currency.) The

prices f.o.b. Buenos Aires are 46.90 pesos per ton for forge coal and 56.05 pesos per ton for coke (both figures are given in Argentine gold). The freight rate from Buenos Aires to Asuncion is 11.06 pesos Argentine gold per ton.

Imports for Past Eight Years

The imports of coal (including coke and forge coal) for the years 1911 to 1918 and the countries of origin are given in the following table:

Imported from—	1911	1912	1913	1914	1915	1916	1917	1918
Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
United States.....	140	328	.....	.....	1	.....	4	54
United Kingdom.....	1,603	1,704	3,800	3,330	1,218	655	136	44
Argentina.....	2	34	42	327	5	50	73	53
Uruguay.....	.....	2	.....	.....	.....	40	.....	.....
Germany.....	.....	66	28	54	.....	10	.....	1
Spain.....	.....	.....	.....	15	.....	.....	.....	.....
Total.....	1,754	2,134	3,870	3,726	1,224	755	213	152

The imports from Argentina and from Uruguay are mostly of American or English origin.

The ever-increasing prices, due to the war, had so affected the imports into Paraguay that scarcely any coke or forge coal was imported during the past two years. The lack of facilities for unloading coal in the harbor of Asuncion and for handling it after unloading further tends to make the price of coal too high for local use. Probably the cost of handling will some day be reduced when the projected port improvements are carried out, and a slight demand may consequently result. Forge coal and coke come in bags.

As shown by the figures given above, the amount consumed here even in normal times will not warrant an extensive campaign for the introduction of American coal and coke unless a considerable change takes place in the fuel market. The best method would be to correspond with the importers, quoting prices and terms. [A list of Asuncion coal and coke importers may be obtained from the Bureau of Foreign and Domestic Commerce or its district and cooperative offices by referring to file No. 123214.] All prices should be f.o.b. port of shipment, stated in Argentine gold, if possible. The Argentine gold peso is equivalent to \$0.965 United States currency. Correspondence should be in Spanish. There is no duty on coke or forge coal.

Coal Exports from Port of New York in July, 1919

Reports showing the amount of coal and coke shipped through the port of New York during July of this year have just been made public. There was a decided decrease as compared with the corresponding month of 1918 and 1917, except in the shipments of bituminous in 1917 and coke in 1918. In July of 1917 only 448 tons of bituminous went out of this port to foreign countries, while in July of last year but 117 tons of coke was shipped to foreign countries by New York shippers.

A tabulation showing shipments of anthracite and bituminous coals and coke in July of 1917, 1918 and 1919 follows:

	1917		Anthracite		1919		1917		Bituminous		1919		1917		Coke		1919	
	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value	Tons	Value
Argentina.....	.....	.....	.....	.....	35	\$402	.....	.....	.....	.....	175	\$1,575	.....	.....	56	\$1,500	.....	.....
Barbados.....	.....	.....	.....	.....	294	2,431	261	\$1,756	6,250	\$44,072	.....	.....	84	\$1,641	40	1,255	.....	.....
Brasil.....	134	\$1,160	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brit. W. Africa.....	18	240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canada.....	14,335	97,427	8,574	\$57,948	4,454	36,957	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colombia.....	.....	.....	.....	.....	200	1,200	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cuba.....	406	3,110	.....	.....	.....	.....	18	100	.....	.....	341	2,046	240	3,576	.....	.....	20	\$420
Denmark.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	405	2,200	.....	.....	.....	.....	25	550
Ecuador.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
France.....	50	585	.....	.....	.....	.....	54	297	.....	.....	.....	.....	2,996	24,095	.....	.....	.....	.....
French W. I.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	60	.....	.....
French Guiana.....	.....	.....	.....	.....	.....	.....	.....	.....	10	80	.....	.....	.....	.....	.....	.....	.....	.....
Italy.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	750	5,000	88	3,395	.....	.....	.....	.....
Jamaica.....	2	25	.....	.....	.....	.....	50	272	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexico.....	.....	.....	.....	.....	20	102	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Newfoundland.....	391	2,073	766	4,876	.....	.....	.....	.....	152	875	.....	.....	.....	.....	.....	.....	138	3,500
Norway.....	.....	.....	.....	.....	.....	.....	.....	.....	1	14	.....	1,176	6,900	.....	.....	.....	.....	.....
O. B. W. I.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Panama.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100	2,400
Portugal.....	257	1,860	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salvador.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Domingo.....	364	2,366	.....	.....	.....	.....	25	240	500	3,260	.....	.....	.....	.....	10	245	.....	.....
Trinidad.....	.....	.....	.....	.....	.....	.....	.....	.....	27	301	.....	.....	.....	.....	.....	.....	.....	.....
Uruguay.....	.....	.....	.....	.....	.....	.....	.....	.....	500	3,800	.....	.....	.....	.....	.....	.....	.....	.....
Venezuela.....	10	140	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	268	.....	.....	.....	.....
Aver. per ton.....	15,967	\$108,986	9,340	\$62,824	4,983	\$40,990	448	\$2,767	7,440	\$52,402	2,847	\$17,721	3,434	\$33,238	117	\$3,220	283	\$6,870
		\$6.82+		\$6.80+		\$8.22+		\$6.17+		\$7.04+		\$6.22+		\$9.67+		\$27.52+		\$24.27+

Italy's Coal Problem

The problem of supplying Italy with coal has become more serious since the armistice, despite the fact that it was thought that once hostilities had ceased the solution would have become easier.

In 1913 Italy imported on the average 900,000 tons of coal per month, equal to 10,800,000 tons annually—2,200,000 tons for the State Railways, 200,000 for the other railways and steam trams, 700,000

for the navy and merchant marine, 1,200,000 for the gasworks, and the remainder for private industry.

During the war the consumption of coal by private industry increased in some branches, such as metallurgy, and decreased in others. The total shows a progressive decrease in coal, due to the shortage of tonnage and diminished production. During the war the Italian Government informed the Allies that the requirements of Italy would be placed at 740,000 tons, which was later reduced to 690,000 tons. There was allotted a monthly supply of only 600,000 tons, but it was only an allotment, for which was always furnished a smaller quantity—5,280,000 equal to a monthly average of 440,000 tons in 1917; 6,400,000 equal to a monthly average of about 530,000 tons in 1918. The most critical month was February, 1918, during which Italy received only 328,000 tons of coal.

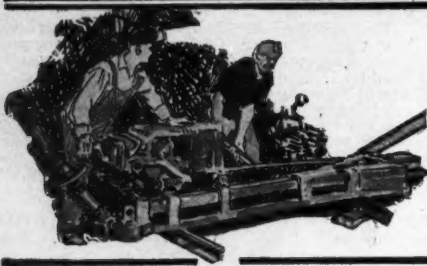
The armistice having come, the Italian Government had the assurance of a monthly average of 800,000 tons for two months, but instead of improving the situation has become steadily worse. In November Italy received 647,000 tons of coal; in December 472,000; in January 339,000; in February 502,000. In March not more than 375,000 tons were received.

In March permission was obtained from the Allied Economic Commission for importing 100,000 tons of coal from the Saar basin, from St. Etienne and Salon. This 100,000 tons arrived, naturally, by land. It was a long flame coal, not suitable for locomotives, and served for other uses.

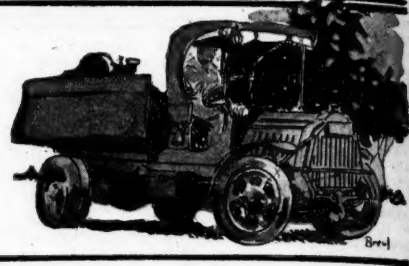
With reference to the furnishing of coal by France, it may be said that this was carried on actively from January, 1918, to January, 1919. It was agreed to by the Allies, always with a view of conserving tonnage, that France should ship its coal by land and replenish its supply from England.

In 1918 Italy received 2,000,000 tons of French coal out of total imports of 6,400,000. The balance was all English. This year she received only 42,000 tons from France, in January and February. All the rest was English coal.

A favorite prospect for the solution of the difficult problem is contained in the possibility of sending American coal to Italy. England leaves her entirely free to obtain supplies from this country.



COAL AND COKE NEWS



Fairmont, W. Va.

Deluge of cars to Fairmont region. Embargoes at tide send coal to Lakes and to the railroads. Other northern West Virginia fields receive poor transportation. Speculation as to effect of steel strike on coal trade.

Cars literally poured into the Fairmont region during the early part of the week ended Sept. 13, but if the Baltimore & Ohio had any expectation of being able to furnish any more empties than could be loaded, such expectations were not fulfilled since practically cars were loaded as fast as received. Such a supply was not as badly needed, however, as in previous weeks, owing to the embargoes as to tidewater shipments from the Fairmont region, except as to special permits in cases where shippers had vessels waiting. Although cars were plentiful, shipping points were more limited, and it was rather embarrassing to many operators; however, they made the best of it by shipping to the Lakes and by increasing the shipment of railroad fuel. Taking the week as a whole, there was an unusually large production, but the Fairmont-Clarksburg district alone was blessed with a sufficient supply of cars, and even in that district the week wound up with many late placements, at least thirty different mines being affected. In contrast to the Fairmont region, the car supply fell behind on roads supplying other northern West Virginia fields; the supply being exceedingly short on both the Western Maryland and the Monongahela railroads, although on the last named road, by the end of the week, mines were receiving about a 90 per cent. supply.

With cars so much more plentiful and with tidewater points embargoed, the natural tendency was for prices to break somewhat since operators were more circumscribed in their markets. However there was an excellent demand for most Fairmont coals and price declines, such as they were, were regarded as being only temporary.

Speculation is rife as to the effect a steel strike might have on coal shipments to the Lakes. However, Lake shipments have been way below normal during the present season; northern West Virginia fields would not be affected to as great an extent as in former years; but the suspension of ore shipments, it is believed, would mean also the suspension of coal shipments.

Charleston, W. Va.

Labor troubles lessening. Car shortage again coming forward to limit production. Tonnage far below normal. Special meeting called to work out better car distribution. Smokeless exports increasing as more ships are available at tide. Kanawha coals may be shut off from tide by embargoes.

Labor troubles were less of a factor in holding back production in central southern West Virginia during the second week of September than during the preceding week, which was in many respects a turbulent one in this section, with 10,000 miners on strike in the Kanawha field and with several strikes marking the course of events in the New River field. While the week opened with 30 or 40 per cent. of the miners absent from their posts after an attempt to invade the Logan field, most of the miners were back at work before the week was over and there was no further outbreak, although it was by no means certain that there would not be a recurrence of the trouble.

It was not so much a shortage of miners, therefore, as it was a shortage of cars which limited production during the week ended Sept. 14. At the outset of the week cars were plentiful, comparatively few having been loaded during the last half of the previous week, but the supply was soon exhausted and the same old trouble was apparent—a scarcity of cars. At no time

during the week was there more than a 70 per cent. supply. Most of the time mines were not able to secure more than a 65 per cent. supply and by the end of the week the supply was even shorter, total production, therefore, running far behind normal.

It was this shortage of cars and its serious effect on production, during the first half of September, which led to the special meeting of the Railroad Relations Committee of the National Coal Association and representatives of the Railroad Administration at White Sulphur Springs. This meeting, just on the edge of the West Virginia coal fields, was called for the purpose of working out some plan for a better distribution of cars. The shortage is a serious one and is seriously crippling production and consequently making it impossible to overcome the shortage for the year.

While only pools Nos. 7 and 46 at tidewater were embargoed, operators along the Chesapeake & Ohio were given to understand that other pools would also be embargoed, thus shutting off shipments altogether to tidewater from C. & O. points. There was still much congestion at tide. However, smokeless producers expected to be able to have enough vessels on hand for the exporting, during the week, of a large tonnage of that kind of coal. The demand at least in eastern markets for steam coal was unabated and rather difficult to procure, especially in view of limited transportation facilities.

While differences between operators and miners in the New River field were hindering production to some extent during the second week of September, the extremely poor car supply played the most important part in pulling down production. In some instances mines were unable to operate at all. Production therefore in the New River field was not at the most over 125,000 tons. Despite a serious congestion of coal loads at and near tidewater points, it was possible for some smokeless producers to export quite a large tonnage during the week, more ships being available at tidewater. It is believed that labor troubles entailed a loss in tonnage of about ten per cent., some mines being closed down entirely at plants whose operators refused to run on a closed shop basis. In the thin-seam section, production was somewhat increased. The tonnage of smokeless finding its way to western markets was rather light in comparison with eastern shipments.

By the middle of the second week of September miners were all back at work in the Kanawha field. In the meantime, however, some mines were unable to operate at all owing to the fact that so few men reported. With cars on hand, left over from the previous week, the supply was entirely adequate for a day or so but by Wednesday had dropped to only 70 per cent. of normal and before the end of the week it was still less. Such a shortage of empties made it impossible to mine more than about 125,000 tons and although a part of such tonnage was flowing to tidewater it was by no means certain when it would be unloaded owing to congestion in that part of the country. Should pools Nos. 5 and 6 be embargoed, as some Kanawha operators rather anticipated, it would mean cutting off entirely the shipment of gas and splint from the Kanawha field to tide. Kanawha producers reported an excellent demand for steam coal in eastern markets, the demand not being so pronounced in western markets. For the most part, such coal as Kanawha mines were able to produce, under limited transportation facilities, was going to contract customers. The car supply on the Kanawha & Michigan was somewhat better than that on the C. & O. However, cars were short the latter part of the week on the Coal and Coke Division of the Baltimore & Ohio.

Consequently mines were able to work at intervals during the latter part of the week or were limited to part time operation each day.

Ashland, Ky.

Northeast Kentucky coal fields secure new through rate. Considerable new trade expected to develop. Bunkerage, transshipment and inland business. Southern railroads should now relieve congestion on C. & O.

Northeast Kentucky Coal Association commends Governor Cornwell on his stand on Plumb bill.

The petition made by the Northeast Kentucky Coal Association for through rates on coal to southeastern points and the Carolinas, and a through tidewater rate to Charleston, S. C., for bunkering and transshipment from all mines along the Big Sandy division of the Chesapeake & Ohio and its branch lines, including the Sandy Valley & Elkhorn and Long Fork railroads, has been answered. Under date of Sept. 9 the Southern Freight Traffic Committee issued telegraphic instructions authorizing the publication of rates on five days' notice under Freight Rate Authority No. 12,817, as follows:

To Charleston, S. C., for bunkering and transshipment, 20c. per ton of 2000 lb. higher than rates from Elkhorn City.

To Charleston proper and to points in southeastern and Carolina territory, 30c. per ton of 2000 lb. higher than rates from Elkhorn City.

This would make the tidewater rate from the northeast Kentucky field to Charleston, S. C., \$2.34 per gross ton.

In view of the serious shortage of coals for European and South American countries, it is believed that considerable new business will be developed in that portion of the Kentucky field affected by the rates, as previous to the granting of the operators' petition the region had never enjoyed a tidewater rate. It will also affect the inland business, as it is felt that there will be an augmented demand from both industrial and domestic consumers for the high-grade coals mined in this region.

Another interesting phase of the matter is presented by the thought that the southern railroad lines involved will be able to handle any traffic resulting from these new rates to the relief of the Chesapeake & Ohio, which of recent years has been seriously congested in its northern and western shipments.

Commendation of the position taken by Governor John J. Cornwell, of West Virginia with reference to the Plumb plan has been expressed by the Executive Committee of the Northeast Kentucky Coal Association in a letter to the West Virginia executive, in which it is said: "The secretary was instructed to communicate with you and to congratulate you for the very forceful and able manner in which you have acquainted your constituents with the imminent danger which confronts them if the Plumb bill should carry. They feel that the best interests of all rests in the private ownership and operation of all industries. They feel that the interests of the state of West Virginia have been and will in the future be well taken care of by you, and are confident that the great majority of the citizens of your state support you in your views."

Birmingham, Ala.

State administration puts through revenue bill as amended. Will raise over half a million dollars from tonnage tax on coal and iron ore. Statistics quoted from report on Alabama coal mines. State deficient in mechanical mining equipment. Coke industry makes good showing in up-to-date plants.

The general revenue bill has finally passed both houses and thus ends one of the hottest, longest-drawn-out and most bitterly contested fights ever staged in the Alabama Legislature. All the influence and all the power the state administration could command was put behind the bill,

says the *Birmingham Age-Herald*. As finally passed, the bill will raise about \$550,000 a year from the coal and iron ore tonnage tax, based upon the average production of the present year. This is 50 per cent of the amount originally intended to be raised from this source. As at first drafted, the bill called for a tax of 5c a ton on coal and 3c a ton on iron ore, but amendments reduced the coal tax by three-fifths, making it 2c. per ton. The vote on this bill was as follows: Ayes, 51; nays, 42; paired, 2; not voting, 10.

The coal and iron interests were charged as being responsible for the deadlock which held up this bill and to have threatened the calling of an extra session of the Alabama Legislature. It was even imputed that a small minority of "coal barons" would try to defeat the revenue bill unless the tonnage tax was eliminated. The various phases of this whole matter, during the last two months, have been noted in the news department of *Coal Age* and the comments given of those most interested in the mineral industry of the state.

In connection with the tonnage tax on Alabama's coal production, some statistics published in the annual report of this state for the year 1918 are of interest. Last year 19,521,840 tons of coal were mined in Alabama and 4,344,726 tons of coke were manufactured here. On this coal production, a tonnage tax of 2c. would net a revenue to the state of \$390,436.80 or a little less than four-fifths of the tax return from Alabama's mines.

The coal men of the state plead a narrow margin on profits, claiming that even a small tax will work hardship on many operators, especially the owner of the small mine. In connection with the cost of producing coal here, it is significant that in 1918, 12,969,975 tons were mined by pick and 6,551,865 tons were produced by means of machines—or 66.4 and 33.6 per cent, respectively. Alabama's principal competitors are much more fortunate apparently in being able to use mining machines to a considerably greater extent. However, in the coke business, byproduct ovens in this state manufacture 2,611,215 tons of coke, or 60.4 per cent, compared with 1,733,511 tons, or 39.9 per cent., from beehive ovens. Some 110 men were killed in the coal mines of Alabama last year, which means that only 177,473 tons of coal were mined per life lost. Also 4.17 per cent. were killed per 1000 employed in the mines. Furthermore, a scant tonnage—741—of coal was produced for each employee.

Indianapolis, Ind.

Idleness of Indiana mines in July due to lack of orders. Car shortage in August. Conflicting expressions of opinion as to state of affairs. Poor coal preparation shifts orders to other states.

It is said that lack of cars was the chief cause of the many shut downs which occurred in Indiana coal mines during August. July reports showed that lack of orders was the principal cause of idleness at the mines. Some of the mines report that they were closed as much as 15 days in August on account of the lack of cars, while others say that they had practically no difficulty at all in getting their quota of cars. In this connection, it was pointed out that the Federal Railroad Administration operates an equalizing office whereby cars are supposed to be distributed in proportion to the necessity and call. This equalization is said to be working as well as can be expected, according to some of the operators. Car distribution always was a bone of contention and it may be that the millennium only will effectually relieve the situation.

Cary Littlejohn, state mine inspector, is authority for the statement that coal operators would not report their mines closed because of a car shortage when in reality the mines might have closed on account of no orders. Walker D. Hines, director general of the Federal Railroad Administration, has declared that the coal car shortage is principally a myth. There was much talk among some operators in July about poor transportation, but according to reports in the office of the state Industrial Board, in which is also the office of the state mine inspector, lack of operation in Indiana mines was due principally to lack of orders for the month in question.

An Indianapolis coal dealer says that the householder has in his cellar now only about 40 per cent. of the coal which he had at the corresponding time last year. It is reported that the Indiana householder has bought less Indiana coal and more coal from other states than he did last year. The same coal dealer further commented

that owing to general conditions during the last two years, Hoosier mines have sent to Indiana consumers, coal which was not as good and as free from waste as it might have been, and that the householder has an opinion about Indiana coal not altogether justified by its real quality.

St. Louis, Mo.

Attorney general resumes investigations of coal matters in Fifth and Ninth districts. Secretary Greenlaw of Coal Trade Bureau testifies. Valuable data presented. Actual costs of producing coal given and expenses analyzed. Average prices charged at the mine noted. Scope of inquiry to determine whether coal producers have violated anti-trust laws.

Attorney General McAllister recently resumed his investigation of the Fifth and Ninth Districts' Coal Trade Bureau, Illinois, which was begun in 1917 but was interrupted at the time of the creation of the Federal Fuel Administration.

The secretary of the Coal Trade Bureau, P. H. Greenlaw, was on the stand parts of three days when he testified as to the manner in which the 46 companies holding membership in the bureau made daily reports of output and prices. He stated that the bureau was supported by an assessment of three mills per ton of output of each member, respectively. On the basis of the production of 16,249,257 tons by member firms in 1918, it is estimated that the revenue of the bureau for the year was \$48,747.

Secretary Greenlaw offered exhibits showing that the average cost of producing coal by member firms was \$1.76 a ton last year. The main items entering into this cost are as follows: Labor, \$1.35; supplies and maintenance, \$0.17; fixed charges, \$0.24. Included in the average mining costs for labor (\$1.35) are, 2.6c. for legal services and 4 mills on the ton for taxes. Among the mines in the group in question are 15 small plants, the report shows, and as production costs in these are slightly higher, they raise the average cost on the whole. Four of the largest mines in the group reported their costs as follows: Mine No. 11—labor, \$1.31, and total cost \$1.67; total tons mined 1,939,437. Mine No. 7—labor, \$1.28, and total cost, \$1.60; tons mined 1,104,405. Mine No. 9—labor, \$1.29, and total cost, \$1.61; total tons mined, 979,904. Mine No. 17—labor, \$1.47, and total cost \$1.78; tons mined 1,386,143. Attorney General McAllister said that the scope of the inquiry, which seeks to determine whether the coal producers have violated the anti-trust laws, would be governed by the testimony of Mr. Greenlaw.

Often times bare statistics are dry reading but not so to coal men in these days when data relative to costs of production and selling prices of coal are involved. During the last two years, cost sheets of coal companies have assumed a new significance. The Fuel Administration carefully prepared blanks which operators were required to fill out monthly giving the whole story of the cost of operating coal mines. Heavy penalty was attached to making incorrect entries in these reports. In connection with the expense of mining coal, a statement presented by the Victor American Fuel Co., of Colorado, is of interest; it appeared in the May 22, 1919, issue of *Coal Age* under the title, "Some Items That Enter Into the Cost of Producing Coal."

During the investigation conducted by the attorney general, of Illinois mining conditions, it further developed that the average price charged at the mine for standard grade coal was \$2.11 on contract and \$2.27 on non-contract; for Staunton grade, \$2.13 on contract and \$2.50 non-contract. Secretary Greenlaw refused to produce the reports sent to his bureau by member firms, showing the grades, amounts and prices of coal shipped out of the Fifth and Ninth districts, with the names of consignees. He took the position that the reports contained confidential trade information which he thought would be found irrelevant to the purposes of the inquiry. In answer to questions, Mr. Greenlaw admitted that reports were received from some non-member firms, and the attorney general intimated that on account of the interstate character of the business, he might seek the aid of the Federal authorities in the investigation. In view of the fact that the "independent" anthracite operators of Pennsylvania expect to sue the U. S. Government for severe losses sustained during the régime of the Fuel Administration, it is altogether probable that the Federal authorities will take an active part in matters pertaining to the cost of producing and marketing coal both in the anthracite and bituminous fields. Informa-

tion about this test case was given in the immediately preceding issue of *Coal Age* in the "News" department under the title "New York, N. Y."

Victoria, B. C.

Coal advanced \$4 during the war to the consumer. Now \$11.50 a ton. Miners receive advance in wages in proportion to cost of living. No shortage of coal expected in Northwest. Miners not working full time.

Coal continues to advance in price in British Columbia, the quotation per ton to the consumer now being \$11.50 a ton, as compared with \$6.50 asked before the war. The explanation, of course, is the high cost of production, although there is a disposition in some quarters to doubt whether the value placed on the fuel is justified. The jump from \$6.50 to \$11.50 did not come without notice. The process has been more or less gradual. During the war there was an investigation into production costs authorized by the Dominion Fuel Controller and, as a result, the price of coal at the bunkers of the various companies was fixed.

Since the first of the present year, coal miners have received increases to their wages. Those employed by the Canadian Collieries, Ltd., the Pacific Coast coal mines, the Nanose Collieries and other companies (with the exception of the Canadian Western Fuel Co.) have had their pay raised at intervals in proportion to the increase in the cost of the necessities of life. The extent of the additions to their pay envelopes is as follows: February 1, 1919, 23c.; May 1, 23c.; Aug. 1, 15c., or a total of 20½ cents. The men of the Canadian Western Fuel Co. did not come within the general arrangement which brought to the employees of the other companies these increases. The situation as regards this company was commented upon in the News department of the Sept. 11, 1919, issue of *Coal Age*, under the title, "Nanaimo, B. C."

With the increase in the miner's pay, some changes were made in the price of domestic coal at the bunkers; to make the cycle complete advances were recorded, almost simultaneously, by the retailers. On April 1 last the retailers announced an increase of 50c. a ton; on June 29 there was added another 50c.; and on Sept. 1 there was a further addition of 75 cents. Thus, since the beginning of the year, the retail price of domestic coal in this province has climbed \$1.75 a ton.

While it is not expected that there will be any shortage of coal in the Pacific Northwest this winter, it is a noteworthy fact that the miners have not been working full time during the summer. Owing to slack trade the Reserve mine was closed down on May 30, previous to which time the mines of the Canadian Western Fuel Co. had been operating only four days a week. With the Reserve inactive it was thought that the other mines could be kept producing to capacity, but this did not prove so as the other mines thereafter worked an average of only 18 days a month.

All the Island mines have been working short time since the month of April, and a careful computation of the loss in output, from that month to Aug. 31, 1919, because of slack trade, shows that it reached the substantial total of 192,807 tons.

PENNSYLVANIA

Anthracite

Hazleton—Mine Workers throughout the Lehigh anthracite coal field express themselves in favor of the movement started to erect a monument to the memory of John Mitchell who was buried on Sept. 12 at Scranton, Penn. It is suggested that each one of the approximately 170,000 miners in the anthracite region give one dollar toward this memorial.

Carbondale—Ground settled over a considerable area in this city recently damaging five properties on lower Powderly Road. The settling occurred over workings of the Hudson Coal Co. The houses in question are said to have been wrecked to such an extent that all household effects have been removed and the families occupying them have sought other quarters. It is predicted that further settlement and some caving of surface will take place in this section.

Pottsville—More than \$15,000,000 are to be spent within the next eighteen months in the southern end of the anthracite region, developing old collieries and opening up new territory. The principal developments will be in the west end of Schuylkill County, where vast mountains of coal await the prospector. Notwithstanding the many millions of tons of coal taken out in that region, the surface of the vast coal product has scarcely been scratched.

Minersville—The Buck Run Coal Co., managed and owned by James B. Neale, former chief of production for the United States Fuel Administration, is completing an up to date athletic field for his employees. Work was first devoted to the baseball diamond, said to be one of the best in the southern fields, but the ground will be made suitable for other forms of athletic amusement and for general recreation.

Seranton—It is reported that a mine fire has been raging since about the first week in September in the big seam of the Continental mine of the Coal Department of the Delaware, Lackawanna & Western R.R. It threatens to spread and destroy considerable coal. All the men employed at the mine are on strike, and unless they will agree to go into the workings and fight the flames untold damage may result, as the fire is now said to be several acres in extent. The mine has ten electric locomotives and four electric machines.

Lansford—Plans are now being made by the Lehigh Coal and Navigation Co. for a resumption of free night schools for employees on the same basis as prevailed before the war. Sessions will probably begin about Oct. 1, in Lansford, and will be held three nights a week. Classes in mining, mechanical and electrical engineering will probably be included, and it is noteworthy that there will probably be instruction in English and naturalization. Instructors will be chosen from the company's own organization and they will be paid by the company.

Shamokin—Recently the Greenough Red Ash Coal Co. sold its colliery near this place to the Madeira-Hill Coal Co. for \$1,000,000. The Greenough plant was controlled by local parties. The retiring officers of the company are, M. W. O'Boyle, president, of Pittston; John H. Foy, vice president, of Pittston; Frank A. Gable, secretary, Shamokin; George C. Graeber, treasurer, Shamokin; Edward Boerman, general manager. The Greenough Colliery was opened up in 1898 and the breaker built in 1900; in 1902 the breaker burned down and was replaced by a modern one. The Madeira-Hill company owns the Natalie colliery immediately adjoining the newly purchased Greenough operation. Some 600 men are employed at the plant, which has just changed hands; in the year 1917 the plant shipped about a quarter of a million tons of coal.

Bituminous

Kittanning—The Allegheny River Mining Co., with general offices here, is opening up 5-ft. seams of coal of good quality at its Brookville and Cadogan mines in Armstrong County. The existence of these seams has been known for some time, but labor sufficient to do the work was not available until now.

Greensburg—The largest car of coal ever loaded along the tracks of the Pennsylvania R.R. was made ready for shipment on the siding of the Keystone Coal and Coke Co.'s mine at Greensburg No. 2. The capacity of the car is 200,000 lb. and with the ten per cent. increase over the marked capacity it will carry 220,000 lb. On the first trip only 200,000 lb. will be carried. The car was recently turned out as an experiment from the Altoona shops. It has two trucks with three wheels each. The only cars anything near this capacity were recently started on the Norfolk & Western R.R.

Brownsville—The Youngstown Sheet and Tinplate Co. is opening a large coal mine and building a town at Buckeye, in Greene County, Penn., on the line of the Pennsylvania R. R. and the Monongahela River. Three million dollars was the initial appropriation for the construction and development work; the output is expected eventually to reach 6,000 tons per day. One of the features of the mine, which will be a shaft operation, is that the coal will be dumped (two cars at a time) by a revolving dump into a large storage bin at the shaft bottom. From this bin the coal will be loaded into a self-dumping 50-ton skip which will be hoisted and dumped by an electric hoist. Only one skip will be used and this will be balanced by a counterweight running in one end of the shaft. Instead of the customary single rope used in hoisting, the skip will be handled with several smaller ropes.

Johnstown—The recent merger of the Imperial Coal Co.—a selling corporation—and the Shade Creek, Diamond Smokeless and the Cambria Smokeless coal companies with the Imperial Coal Corporation, with a capital of \$440,000, means the formation of a concern which will later largely increase its capital and also the present production of about 600,000 tons a year. It is said to be probable that other opera-

tions will be taken into the concern. The Shade Creek mines are at Miller Run, Somerset County, in the Windber field; the Cambria Smokeless plant is at Coalport, Clearfield County; and the Diamond Smokeless mines are at Charles, Indiana County, about seven miles west of Johnstown. The main offices will be in Johnstown but the president—Charles A. Owen—will maintain an office in New York City. The other officers of the company are: James P. Thomas, Johnstown, vice president; Frank D. Baker, Johnstown, secretary; Philip E. Thomas, Philadelphia, treasurer; E. H. Zimmerman, New York, assistant treasurer and James M. Cook, Johnstown, general superintendent. These, with H. A. Ling, of Philadelphia, are the directors of the corporation.

WEST VIRGINIA

Fairmont—Speed marked the construction of the new bin and coaling station erected by the Consolidation Coal Co. at its shaft mine No. 33 at Barnstown. The bin was destroyed by fire on June 22, less than two months being required to rebuild the coaling station. The bin has a height of 75 ft. above the railroad. The capacity of the new bin is 1200 tons, there being room for 800 tons in the storage bin proper and for 400 tons in the coaling station. A 25-hp. Westinghouse motor is a part of the loading equipment.

Wheeling—Four thousand acres of coal land, property of the Richland Coal Co., known as the Beech Bottom mine, north of this city, was sold recently to the American Gas and Electric Co., of Beech Bottom. The purchase price was not announced. The property was purchased to supply coal for the mammoth electric power plant at Beech Bottom.

The present annual production is said to be 400,000 tons which the purchaser expects to increase by 50 per cent. The tippie is close to the power plant and the company will thus secure a great advantage by direct delivery.

Charleston—The Railroad Committee of the National Coal Association was in session at White Sulphur Springs, W. Va., on Sept. 12, a special meeting having been called in order to deal with the car situation, which has been daily growing worse and which looms large as the principal factor in a possible and in fact probable fuel famine during the coming months. The meeting at White Sulphur was evidently called for the purpose of holding a conference with secretaries and other officials of the various district coal associations in West Virginia, since all association officers received notice of the meeting and were invited to be present; both D. C. Kennedy, secretary of the Kanawha Coal Operators' Association and M. H. Tomb, secretary of the Kanawha Coal Shippers' Association attending the meeting. Other districts, insofar as could be learned, also had representatives at the meeting. J. G. Bradley, president of the West Virginia Coal Association, is Chairman of the Railroad Committee of the National Coal Association.

Changes will be made in the system of rating mines for cars and in the distribution of cars to mines as the result of a conference held on Sept. 12 and 13, at White Sulphur Springs between the committee on Railroad Relations of the National Coal Association and representatives of the United States Railroad Administration. For instance, it is believed, that the practice of counting cars half loaded with screened coal at the end of a day as a part of the next day's supply will be discontinued. It is also proposed to adopt a uniform system of rating mines and of distributing cars to them; car-rating rules and car-distribution rules now undergoing revision. New rules will be available for distribution in a few days, it is said. J. G. Bradley, president of the West Virginia Coal Association and also chairman of the Railroad Relations Committee, of the Association, presided at the White Sulphur meeting. A special meeting of the Executive Committee of the West Virginia Coal Association was also held at White Sulphur during the conference.

OHIO

Murray—The Murphy-Hocking Coal Co., recently organized, has taken a lease on 250 acres of coal lands from the Sunday Creek Coal Co.; the property is located near this place, on the Hocking Valley Ry. A tippie is being constructed and electrical equipment installed. Loading will start soon. The concern will work both No. 6 and No. 7 seams of coal.

Nelsonville—Recently three large slack piles in the Hocking Valley field have changed hands and preparations are being made for shipping the slack. It was found during the war that slack could be

used to good advantage by steam users, by the installation of a special sort of stoker, and that because of cheapness it is an advantage to use it. Shipping slack from these piles will be started soon.

Columbus—A large and representative audience of coal men heard an address by George H. Cushing, managing director of the American Wholesale Coal Association here recently. Following a dinner at the Chittenden Hotel Mr. Cushing spoke at length on present conditions, emphasizing the fact that there will be no marked coal shortage this winter if coal men keep their heads and do not urge people to buy to any excess at present. He pointed out that the deficiency of approximately 25,000,000 tons of several months ago, is being reduced by increasing production, by about 9,000,000 to 11,000,000 tons per week, and that the current needs are about 9,000,000 tons. The various reasons for the falling off of demand since the war were explained. He urged coal men to not permit a runaway market in order to prevent Government control or drastic regulations. G. H. Merriwether, secretary-treasurer of the association also spoke.

The entire sales force of the Sunday Creek Coal Co., visited many of the company's operations in the Hocking Valley field recently for the purpose of familiarizing the salesmen with mining conditions and equipment. Those in the party were J. R. Fitzer, general sales manager; M. B. Kinsey, Toledo; R. D. Teele, Grand Rapids; J. S. Fitzer, Bucyrus; E. F. Kelly, Findlay; M. J. Gallagher and G. H. Case, Columbus; H. C. Davis, Ft. Wayne.

INDIANA

Shelbyville—Laboring men of this city members of local unions, have arranged to take over a local coal yard and to provide coal for themselves during the winter at cost. A company is being formed and shares are being sold at \$5 each. Only two shares will be sold to each member who may pay for them at the rate of 50c a week. Coal will be sold at cost only to the share holders.

Evansville—The Southern Indiana Coal Bureau has appointed a committee to investigate a bomb explosion, at the mine of the Bosse Coal Co., at Buckskin, a few miles north of this city, from the results of which George Lutz, mine foreman, may lose his life. The Coal Bureau made an appeal to the sheriff and the prosecuting attorney of Gibson County to see that the men who committed the crime are brought to justice. Mr. Lutz was injured by an explosion of dynamite which had been placed on top of the mine cage. Walter B. Korff, manager of the Bosse company, says that threats had been made against him by the same men who had threatened the life of Foreman Lutz.

ILLINOIS

Centralia—The Bell & Zoller Mining Co., operating mine No. 5, south of here, recently broke its record in hoisting coal. The day's run totalled 3,250 tons in eight hours, or over 400 tons per hour. This is considered quite a record at the present time.

Marion—The newly reorganized Sunrise Coal Co., which operates the "Cambria" mine in Williamson County near here, is rapidly completing the remodeling and reconstructing of the plant. A new switch is being built to the mine from the main line, by the Illinois Central R.R. The output is expected to be increased 50 per cent. by the improvements which are being made.

Belleville—The Southern Coal, Coke and Mining Co. has closed the Muren mine indefinitely. The mines are to be taken from the mine and operations entirely suspended, probably until next spring. The company reports that the number of men in the New Baden, at New Baden, and Shiloh and Little Oak mines, at this place, is increasing daily. The general offices of the company are at St. Louis, Mo.

Duquoin—The Old Ben Coal Corporation is now completing what promises to be one of its largest collieries in the state, near Pershing, Williamson County. Work has been in progress for over a year and coal has been hoisted out of the air shaft for several months. It is expected that shortly coal will be reached in the main shaft and then operations will take on new life. When working at full capacity this mine will employ between 800 to 1000 men, with a tonnage of 6000 daily. All machinery and equipment will be electrically operated and the most modern methods of mining will be used.

The Old Ben Company is one of the big shippers of the state and one of the most progressive as well.

Stanton.—The coal hoisted at 87 mines in the Fifth and Ninth districts of Illinois decreased from 826,704 tons in July to 446,335 tons in August, according to an exhibit filed by P. H. Greenlaw, secretary of the Fifth and Ninth districts' Bureau at an inquiry conducted by Attorney General McAlister, of Missouri, in St. Louis recently. The decrease was mostly due, it was stated, to labor troubles, although mine disability, lack of market and car shortage had their influence. During July the mines were idle 192 hours because of labor trouble and in August the idle hours from that cause ran to 7,392. The Illinois strikes started July 31 and by Aug. 5 had spread over a considerable part of the state. In July the mines were idle 1,253 hours on account of disability. This disability was cut to 757 idle hours in August. The idleness in July from lack of market was 7,946 hours. The idleness from this cause was reduced in August to 3,011 hours. Loss of time from lack of cars was practically the same in the two months, 6,005 hours in July and 3,605 hours in August.

OKLAHOMA

McAlester.—The Oklahoma Coal Operators' Association at the annual meeting held here recently, elected Dorset Carter of Oklahoma City, as president to succeed E. T. Price, of Muskogee. Other officers were elected as follows: Dan McAlpine, Halleyville, Okla., vice president; F. F. Lagrave, McAlester, secretary and treasurer; J. B. Wilson, of McAlester was re-elected as commissioner for the coal operators. The board of directors for the coming year will be as follows: James Duncan, Alton, Ill.; James McConnell, Wilburton, Okla.; John Reid, McAlester, Okla.; P. W. Malley, Lehigh, Okla.; R. T. Price, Muskogee, Okla.; William A. Evans, McAlester, Okla. and William Jones, Hartshorne, Okla. Three delegates to the Buffalo wage conference will be appointed later by Mr. Carter.

MISSOURI

St. Louis.—Morton F. Leopold, safety engineer of the United States Bureau of Mines, was in this City recently making arrangements for the exhibit which is to be made by the Government at the American Mining Congress, to be held at the Planters Hotel here Nov. 17 to 21. The exhibit will include a moving picture of "The Story of Coal," showing its development from primeval beginnings to the last step in coal mining. Demonstrations will show the development of war gases and gas masks undertaken by the Bureau of Mines before Chemical Service was instituted. A model coal mine will be shown at work. Not only mine operators and owners but labor leaders, governors and members of Congress are expected to attend. The meeting will be the first one held in three years. Industrial problems that affect the mining industry will be considered.

COLORADO

Grand Junction.—Coal operators in the vicinity of Palisades, east of here, expect to double their output as a result of revised tariffs reducing the freight rates on coal, thus permitting them to compete with the Utah mines and extend their trade territory to various parts of Colorado and Utah.

Equipment to handle increased output is in process of installation.

Foreign News

Sydney, N. S.—The New Victoria mine of the Dominion Coal Co., which in 1902 had a producing capacity of about 1800 tons per day and employed some 400 men, has been re-opened. It had been closed down during the war.

Edmonton, Alberta.—Production of coal in Alberta is rapidly becoming normal again and there is every prospect that a large quantity will be got out before the winter sets in. At the Drumheller mines the output is nearing the 3000-ton mark, which is considered very satisfactory. At Crows Nest Pass production is going ahead rapidly with over 1000 miners at work and 300 more at the mines in the immediate vicinity. At Lethbridge all the mines in the district are working to full capacity, and the Canadian Pacific Ry. mines are shipping between 50 and 75 cars per day, which is a large production.

Calgary, Alberta.—At the Industrial Congress recently held here an address was delivered by Dr. Dowling on the coal resources of the Province of Alberta. He

said that in the country from the Grand Trunk Pacific to the Smoky River there is as much coal as in the whole of the Province of Nova Scotia. There was estimated to be 1,000,000,000 tons of anthracite which compares favorably with the Welsh product although not as hard as that of Pennsylvania. The area of Alberta's coal lands Dr. Dowling placed at 25,000 sq. mi. which is in a belt 50 miles wide that runs along the foot-hills, sweeps out to the plains and back to the hills.

Victoria, B. C.—In conformity with an amendment to the Coal Mines Regulation Act, passed at the last session of the British Columbia Legislature, all plans filed with the Department of Mines hereafter must be prepared by a competent and properly qualified man holding a certificate under the provisions of the Act. From Oct. 1 no plans will be accepted unless prepared by a person who has had two years practical experience in surveying mines or is the holder of a diploma in scientific and mining training; this after a course of study of at least two years at an approved educational institution, and who is competent to make an accurate survey of the workings of a coal mine and to connect such survey with a surface survey, etc. Sobriety and general good conduct also are stipulated.

Melbourne, New South Wales.—Acting under regulations authorizing the prime minister to acquire and dispose of all coal mined in Australia, the commonwealth Government has virtually taken control of the coal industry in New South Wales. Strikes have been averted and the wages of the coal miners increased by the action of the Government.

The coal regulations were passed by the Federal council, under the war precautions act, and empower the Government to control the sale and distribution of coal and to fix rates of wages to be paid the miners.

The Government is authorized to acquire all the coal mined in New South Wales and to set the price at which coal purchased from stocks belonging to the commonwealth may be sold. It is made an offense to sell coal at any higher price than that fixed by the Government.

The object of the coal regulations was to insure the continuous operation of the coal mines and avert a disastrous strike. The agreement under which the miners get higher wages was approved by the great majority of the workers.

Personals

W. W. Cox, engineer for the Peabody Coal Co., at its mine near Marion, Ill., has been transferred by that company to Hellier, Ky.

W. T. Delihant, Jr., who has been with the Taylor Coal Co., for several years, has taken a position as manager of the coal department with the H. M. Byllesby & Co., of Chicago.

W. S. Walker, formerly with the Northern Coal Co., has been appointed special representative of the Peabody Coal Co. Mr. Walker will have charge of two mines in Gallatin County, Ill., which are operated by the latter company.

W. D. Howard, who has been superintendent for the Laurel Hill Mining Co., at Arcola, Webster County, W. Va., for over three years, has resigned to accept a similar position with the Miller Coal Co., at Adrian, in Upshur County, W. Va.

J. A. Graft, Connellsville, Penn., and **C. E. Brown,** Kingwood, W. Va., have been appointed instructors in the mining extension bureau of West Virginia University, to have headquarters at Beckley, Raleigh County, and Wellsburg, Brooke County, W. Va., respectively.

John A. Malady has been appointed master mechanic for the Hillman Coal and Coke Co., with headquarters in the First National Bank Bldg., Pittsburgh, Penn. He held a similar position with the United Coal Corporation, of Pittsburgh, Penn., before its absorption by the Hillman company.

Clarence W. Watson, Jere H. Wheelwright and Sprigg D. Camden, all prominently identified with the Consolidation Coal Co., have been elected directors of the West Virginia Metal Products Corporation. This concern was recently organized with a capital of \$2,500,000. It is stated that the plant will cost \$1,500,000.

Thomas J. Smith, of Pana, Christian County, Ill., was recently reelected to succeed himself for the sixth successive term as county mine examiner. Mr. Smith had a petition bearing the names of a large

majority of the prominent mining men of the county. He is now serving his thirteenth year in his present position, having finished the terms of other examiners.

Obituary

Samuel Seger, a coal and coke operator of Ligonier, Westmoreland County, Penn., died at the age of 49. The brothers, Samuel and John Seger, were engaged in opening the coal field of the Ligonier Valley and establishing plants at Ligonier and Millwood.

J. P. Brennan, aged 62, died at his home in Scottsdale, Penn. For many years he has been prominently identified with the Connellsville and Lower Connellsville coke regions, being best known as a coke plant builder. Most of his plants were absorbed by the McClure interests and later taken over by the Frick Company. At one time he was the leading spirit in the Producers Coke Co. and in the Connellsville Coal Tariff Association. At the time of his death he was president of the Producers company, vice president of the Central Connellsville Coke Co. and a director in the Thompson Connellsville Coke Co. Mr. Brennan built the plant of the last named company and was its active head from 1907 until the company was taken over by the Hillman interests.

Industrial News

Fairmont, W. Va.—Robert Talbott, Fairmont, and associates, are arranging plans for the development of about 1000 acres of coal properties in the Lowesville, W. Va., section.

Fairmont, W. Va.—A large number of new houses are being built by the Harry B. Coal Co., at its Pitcairn plant. The company is also installing new machinery at the same plant, including 50 new mine cars and two Jeffrey mining machines.

Bellefonte, Penn.—The Manufacturers' Coal Co., with headquarters at this place, in Cambria County, has recently started two new mines; one known as Aldine No. 1, at Spangler, Penn., and Aldine No. 2, at Indiana, Penn.

Warfield, Ky.—The Himler Coal Co. will build a railroad bridge at a cost of \$130,000 across Tug River, a mile and a half of siding, forty miners' houses, etc., in developing 1,400 acres of coal land for a daily production of 2,500 tons.

Macdonald, W. Va.—The New River Co., with headquarters here, in Fayette County, is equipping four of its mines with automatic cagers made by the Mining Safety Device Co., of Bowerston, Ohio. Many of the big mines of the country are provided with this device, and it is worthy of note that those holding records for production are thus equipped.

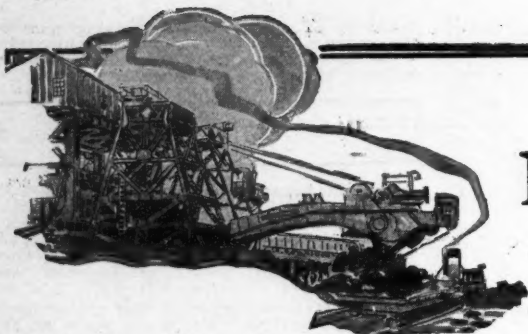
New Cumberland, W. Va.—The West Virginia-Pittsburgh Coal Co. is considering plans for the construction of a new power plant at its properties, to be used for general works operation. It is proposed to make extensive improvements in the present transportation at the plant, to facilitate operations, the entire work being estimated to cost \$100,000.

Charleston, W. Va.—The Camp Creek Coal Co., recently organized with a capital of \$500,000, is arranging plans for the development of extensive coal properties located on Camp Creek in the southern part of West Virginia, comprising a total of approximately 2039 acres. The property has just been purchased by the new organization for a consideration of about \$300,000; it is proposed to commence work at an early date on the construction of a new plant and the installation of complete equipment for development, estimated to cost in excess of \$150,000. L. A. Tinder is president, and L. W. Hamilton, secretary.

Chicago, Ill.—The Roberts & Schaefer Co., engineers and contractors of this place announces new construction as follows:

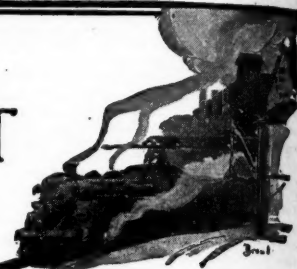
The Wolf Den Coal Co., at Kitzmiller, Md., has recently put into operation their new Marcus patent picking table screen. The Storm King Coal Co., of Jeff, Ky., has contracted for a complete Marcus tippie, which will also have incorporated in it shaking loading booms. The Clinchfield Coal Corporation has contracted for a Marcus screen to be installed in its No. 3 tippie, near Dante, Va. The installation also includes a retarding conveyor and cross-over dump.

The above concerns are installing Roberts & Schaefer equipment.



MARKET DEPARTMENT

EDITED BY ALEX MOSS



Weekly Review

Soft Coal Market Quiet—Steel Industry Taking All the Coal It Can Get—Division of Opinion Regarding Car Supply—Prices Maintain Levels—Export Business Unprecedented—Anthracite Steam Demand Listless

TAKEN in its entirety, for the country as a whole, it can be stated that the market for bituminous coal is quiet. Beyond doubt the saturnalia of strikes is having its effect. Strange to relate, however, iron and steel works continue to take all the steam coal they can get, despite the tieup of that industry which is threatened at this writing.

The questions of adequate car supply and the attitude of mine labor still loom up all-important to the soft-coal operators. Regarding the former, opinion seems to be divided. Reports of betterment from one section are counterbalanced by complaints from another. However, weighing one against the other, a slight improvement in car supply is noticeable. As to labor, no one can state with any degree of certainty what the situation in the soft-coal industry will be in the not-distant future.

Already there is talk of nationalization or, to use the newer expression, "socialization" of the coal industry;

and rumor has it that such a scheme is sponsored by no less a person than our worthy President himself. Surely, this is a time for sanity or clear thinking!

Until the miners' delegates, who are now assembled in convention in Cleveland, present their demands, it is futile to conjecture as to the probable attitude of the operators. In the meantime, the efficiency of the mine worker seems sadly impaired, and this will doubtless be the case until the crux of the situation is reached.

Bituminous coal prices cannot be said to have changed much within the past week. The steam coals show practically no new levels, while the trend in price of the better grades of domestic coal, if anything, is slightly on the up grade.

The strike of the coal dock workers at the head of the Great Lakes has finally been settled, the men having been granted wage increases of about 11 per cent. A total of five weeks' time was lost on account of the strike, and some 200,000 tons of bituminous

coal have been held in storage by lake carriers, awaiting a settlement. Lake shipments of soft coal in August of this year amounted to 2,700,000 tons, compared to 4,800,000 tons in August, 1918.

Exports of coal continue on an unprecedented rate, and a considerably larger tonnage could be shipped abroad if there were more vessels. An increased call is noticed for gas coals for export, and several large English buyers are here in an effort to obtain coal for delivery to Italy and France, to take the place of Welsh coals that are held in check by the British Government's restrictions on exports.

Anthracite production is on a par with that of 1916, which was a normal year. The opening up of many coal washeries late in the fall will furnish sufficient extra tonnage to offset the growth in consumption since 1916. The producers are having trouble in disposing of their steam sizes of anthracite, while the domestic sizes, such as egg, stove and chestnut, are scarce.

Atlantic Seaboard

BOSTON

Steam coal extremely quiet. All grades quoted at lower prices all-rail. Receipts still heavy by that route. Medium to poor grades druggery at New York and Philadelphia piers. Hampton Roads market continues strong. Prices on Pocahontas and New River for inland delivery equally strong. Towboat engineers threaten strike. Prospect for anthracite therefore uncertain.

Bituminous—We have seldom had a September with so poor an outlook for fall business. In the spring many operators were so confident of a strong market at this time that they reserved a large proportion of their output for "free coal." Not being able to make contracts for season delivery, buyers in this territory took the alternative of purchasing spot coal wherever available. One result was the bidding up of prices in June and July, and another is the rapid recession in prices since Aug. 15. Steam-users now have ample stocks, there is little inquiry for spot shipment, and so eager are sales agents to induce buying that it will be extremely difficult to create any interest in the market for weeks, if not months, to come. These remarks apply to all the grades shipped all-rail, the lowest cost avenue of supply to this whole territory. The state of trade is hopelessly dull and there are few who have any confidence in improved conditions later this season.

Present quotations show a further falling off as compared with a week ago. The choice grades have now begun to show the

effect of current conditions and it is quite likely that those operators who have no very strong outlet for export will be in the open market before long looking for business. The whole situation on Pennsylvania grades is so easy, so far as buyers are concerned, that offers of 10c. @ 15c. less than quotations are sure to be accepted. Phillipsburg coals are now an easy purchase at \$2.40 @ 2.60 per net ton, and even high-grade Moshannons are selling down to \$2.85 for prompt shipment. First-class Cambrias can be had at \$3.10 @ 3.25 not necessary at first hands, and the next move will be down rather than up.

Meanwhile, shipments continue heavy on old purchases. All-rail receipts are still keeping up to the volume maintained through the latter part of August, and it is clear that all chance of a steam coal shortage are effectually removed, unless strike difficulties intervene. Statements are still handed out complaining of "light" shipments to New England, but the comparisons are made with 1918 when a widespread scare prevailed and buyers determined to err on the side of over stocks, rather than risk being without coal at the beginning of the next season. It was psychological, as so many such situations are, but since steam-users bought with such large eyes it takes time for the trade to get back on anything like a normal basis. The chances are favorable now for starting in next April with most of the large consumers reasonably well-stocked with fuel. It must not be forgotten, too, that fuel oil is making inroads on coal tonnage. An oil-tanker arrived here within a few days that alone would displace nearly 15,000 tons of coal.

At the tidewater piers, at New York particularly, prices have softened mate-

rially. There is ample tonnage available of high-grade low volatiles for bunker and overseas use, and in consequence there is much less opening for the medium qualities. Poor coals that are less than "good" have struck hard going and only with difficulty are they absorbed. At Philadelphia the receipts are less and the market is not quite so depressed, but shippers are fast reaching the point where they will not consign to the piers without firm orders in hand. The outcome will doubtless have a favorable affect on the prices now ruling.

Gas coals are also off in price. Shippers of fancy grades have also relied on a strong market this fall and now find themselves casting about for orders. The premiums that prevailed six weeks ago have now almost entirely disappeared.

On Hampton Roads so large a volume of the smokeless coals are being taken for export and for Government purposes that prices there have been unaffected by the current lack of demand in New England. Quotations, where made, continue on the same firm basis that has prevailed now for 60 days and there is even a want of prepared coal for shipment west. Output is reasonably large and yet there is apparently no surplus to be worked off in this territory. It only emphasizes the extent to which the trade here has shifted from West Virginia sources of supply to those districts in Pennsylvania that are open to the all-rail route.

There are still enough buyers inland, who will pay the price for the smokeless grades, to keep quotations on a high level. At Providence sales are being made on the basis of \$8.75 @ \$9.00 per gross ton f.o.b. cars and the coal is being taken at places where the rate is 90c. @ \$1, even though all-rail deliveries of fair grade Pennsylvania can

be had at nearly \$3 less. This is only one of the anomalies of the present situation. Current quotations on bituminous at wholesale range about as follows:

	Clearfields	Cambrias and Somersets
F. o. b. mines, net ton...	\$2.40@2.90	\$2.85@3.25
F. o. b. Philadelphia, gross ton.....	4.50@5.10	5.05@5.50
F. o. b. New York, gross ton.....	4.85@5.45	5.40@5.80
Alongside Boston (water coal), gross ton.....	6.75@7.60	7.50@7.75

Georges Creek is quoted at \$3.70 per net ton, f. o. b. mines.

Poconos and New River quotations continue on the basis of 6.00@6.50 per gross ton f. o. b. Norfolk and Newport News, but no sales are reported at these figures other than for export or bunker trade.

Anthracite—The ultimatum of marine engineers that they will walk out on Sept. 25 unless their demands are met is causing renewed alarm among the retail dealers who are dependent upon ocean tugs for their continuing supply of domestic sizes. Another interruption to water transportation would certainly prove serious, especially to those points up the rivers where navigation closes in December. The all-rail route has never been dependable for shipments so far east and there is much anxiety on the subject. Just now a real effort is being made to concentrate on shipments to those points that are still very much in arrears on receipts of anthracite.

On hard coal in Reading barges an advance in rates is scheduled to go into effect on Sept. 22. To Boston from Philadelphia the rate will be \$1.55 instead of \$1.30, as heretofore this season.

NEW YORK

Domestic sizes of anthracite continue to be short, while the steam sizes are plentiful. Local dealers not pushed for coal and have cleaned up most of their early orders. Egg size shorter than stove. Dealers take chestnut in order to get the larger coals. Inland dealers buying heavily. Bituminous quiet. Plenty of coal here and many embargoes placed.

Anthracite—Market conditions are far from normal. The demand for the domestic coals has not subsided, and the strike in the Northern coal fields not only resulted in a heavy loss in production but increased the pressure on the shippers of those coals.

Frequently it has been said that the call for stove had eased somewhat and that egg was the shortest of the larger coals, but there are shippers who complain of the continued lack of both egg and stove. So far as chestnut size goes, it is easier, and most shippers are able to keep it moving by urging buyers to take a small percentage of it in their cargoes of other coals.

The labor situation tended to cause more anxiety among the New England dealers, many of whom feared they would run short of supplies if it continued much longer. As a result there was increased urgency on local wholesale houses for both water and all-rail shipments.

Locally the situation is satisfactory when considered in connection with outside conditions. The trade here is not suffering from the lack of coal, although it cannot be said to be entirely satisfied with the tonnage on hand. Retailers have had a strenuous summer filling the orders placed in the early spring and summer months. These orders have been pretty well cleaned off the books and comparatively few new orders are now being received.

Similar conditions exist in the surrounding territory, although there is more coal in the yards than there is in the city yards. With these conditions the trade feels that the situation here next winter will be far better than anticipated.

The reports that excessive premiums were being offered and paid for independent coals are not being heard now. Independent coal is now said to be bringing not more than 75c differential allowed by the Fuel Administration, and in some instances it is claimed not that much is being asked. Local dealers are in a position where only in isolated cases are they paying more than company schedule.

There is hardly any demand for the steam coals. Buckwheat, while plentiful, is not menacing the market because the companies have facilities for storing the surplus, and quotations for it and for rice

of the better grades are close to full circular. Considerable easier figures are being quoted for the off grades. Barley coal is hard to dispose of and independent product is said to be quoted around 75c at the mines.

Dumpings of anthracite at the local railroad docks for the week ended Sept. 18 were 4260 cars, as compared with 5540 cars the week previous.

Quotations for company, white ash coals, per gross tons, at the mines and f. o. b. New York tidewater lower ports, follows:

	Mine	Tidewater
Broken.....	\$5.95	\$7.80
Egg.....	6.35	8.20
Stove.....	6.60	8.45
Chestnut.....	6.70	8.55
Pea.....	5.30	7.05
Buckwheat.....	3.40	5.15
Rice.....	2.75	4.50
Barley.....	2.25	4.00

Bituminous—The feeling that there would be a strike among the steel workers with the resultant effect upon the coal situation caused many buyers to stay out of the market in anticipation of a runaway market with much lower prices. This caused a decided let-up in buying, and as a result the local ports became blocked with coal and many embargoes were ordered. This had little effect upon quotations, however, as shippers were not to be thrown into a frenzy to dispose of their holdings at reduced figures.

Car supply is reported as better along the Pennsylvania and Central lines, but there has not been much change along the Baltimore & Ohio. Quicker shipments are being reported in all directions.

The order for the issuance of a permit to allow shipments to South Amboy inaugurated several days ago is still in force.

The demand along the lines has tended to keep the accumulation in the market down. The better grades are scarce for the spot buyer.

New England buyers continue to be out for heavy purchases, although the demand has not been up to expectation. It is predicted that the next few weeks will see home heavy buying in that section.

Salesmen report a brisk market along the rails with prices firm.

The export demand is far in excess of the vessels available. New inquiries are being received continuously, but contracts must be limited because of the lack of bottoms. Demand for bunker coals is heavy because of the large number of vessels entering this port.

There were 4826 cars of bituminous dumped at the local railroad piers during the six days ended Sept. 18, as compared with 5570 cars the week previous.

There is considerable coal in the various pools and quotations for coal, f. o. b. at the pier range about as follows: Pools No. 1, 2 and 71, \$5.55@5.90; No. 10, \$5.15@5.35; No. 11, \$4.90@5.10; and Nos. 18 and 41, \$4.80@4.90.

Quotations for spot coals, net tons, at the mine range about as follows:

	Spot
South Fork (best).....	\$3.25@3.50
Cambria (best).....	3.00@3.25
Cambria (ordinary).....	2.70@2.90
Clearfield (best).....	3.00@3.25
Clearfield (ordinary).....	2.70@2.90
Reynoldsville.....	2.85@2.90
Quemahoning.....	3.25@3.50
Somersets (medium).....	3.00@3.25
Somersets (poor).....	2.65@2.75
Western Maryland.....	2.65@2.75
Fairmont.....	2.50@2.65
Fairmont j. m.....	3.10@3.25
Latrobe.....	2.75@2.90
Greensburg.....	2.75@3.00
Westmoreland, j. m.....	3.50@3.75
Westmoreland run-of-mine.....	3.20@3.35

PHILADELPHIA

Anthracite demand is all on egg, stove and nut. Light shipments to local trade. Dealers object to being slighted on price. Retail ordering increases. Strike conditions cleared for moment. Consumers anxious to avoid increase after Nov. 1. Production well maintained. Pea a problem to dealers. Steam coals troublesome to producers. Bituminous easier. Slight price reductions on some grades. Heavy storing. Fairmont coals maintain strong position. Embargoes everywhere.

Anthracite—The local market is featured by almost the entire absence of the large prepared sizes—egg, stove and nut. Usually the large companies have been accustomed to make heavy shipments of all

sizes at this time of the year, but up to this time none of them has seen fit to take care of the local dealers. This is particularly true of one of the companies which practically deserted the city during the war, shipping its entire tonnage to New England, by which method it believed it would get the additional financial advantage of routing shipments via a small railroad closely allied to the coal company. Even this company, which has always considered this market peculiarly its own, has made light shipments of the most desirable sizes. The only explanation continues to be that the lake region and New England must be taken care of first.

The dealers are inclined to grow somewhat critical of their present treatment. They readily admit that the city on account of its proximity to the mines is easiest taken care of in the winter, when transportation is often hampered. Their chief complaint lies in the fact that all summer long they have seen coal at its cheapest go into other markets, and then later in the season when the price is at its maximum the coal is shipped here. They feel that the consumers in this territory are entitled to a greater proportion of the cheap fuel than they have been getting.

The coal men have been somewhat surprised at the persistence with which people continue to place orders for future delivery. The new business comes in a gentle stream, and while most dealers had hoped to have the bulk of their storing business cleared off the books by the first of September, they have now reached the point where orders are beginning to get ahead of the deliveries. Unfortunately, the greater portion of the orders continues to be for stove and chestnut, and if anything it has slightly turned in favor of the latter size recently. There is more than one dealer who is now urging chestnut in advance of stove. There is practically no tonnage whatever of these two sizes in the local yards this week, and those concerns which had hoped to go into the winter with storage stocks of nut have been greatly disappointed. In addition to these sizes there has been considerable increased business on egg, but this size has in no wise improved over its condition during the past eight or ten weeks. As it looks now the time is not far distant when the consumer will be willing to take any one of the three large prepared sizes.

As stated last week pea coal is hanging very heavy on the hands of the dealers. It has got so that more than one has been compelled to ask his shipper to hold off until he could make more room to store the coal. The number of dealers advertising this size in the papers has increased, and while it has been productive of some business it has not been sufficient to affect the situation. There are dealers who are growing anxious as to the quantity of pea coal in stock, especially since it is tying up a considerable portion of their capital. Nevertheless the opinion is that when cold weather comes there will not be a single dealer in the city who will not be glad to have this size on hand. There has been no time during the past eight or nine years when any retailers carried anything but the most meager stocks of pea coal into the spring, and the usual case has been that they have had none at all.

The production reports of the operating companies continue to indicate a tonnage equal to three years ago, with every likelihood that this production will keep up. With the opening of the big washeries of the larger companies later in the season it is believed that the additional tonnage from them will be sufficient to produce the additional tonnage needed to offset the growth in consumption since 1916.

The companies at this time are having much trouble with the steam sizes. The market is far from able to absorb the production and their maximum tonnage. The expected improvement in buckwheat has failed to arrive and it is believed that the price of this size as compared with both the contract and spot prices of bituminous has hurt buckwheat. This latter fact also applies to rice and barley and the belief is growing now that much of these two sizes now in storage will remain there.

Bituminous—There continued to be an easing off in the Pennsylvania soft-coal grades. All tide ports have been embargoed and this has released a heavy tonnage for line sale. Quite a little of good coal has come on the spot market as a consequence. There has been a fair volume of Pool 9 coal to be had in this way, although the greater portion of this fuel continues to be placed on contracts. Pool 10 fuel was in much freer supply and while fuel sales have been made of it, many buyers

have assumed the attitude that coal can be bought later at a recession from the present prices and are slow to buy in quantity at this time. The fact is that once the embargoes are raised at tide prices will quickly recover from the slight recession that has been made during the past two weeks.

The lower grade coals, such as Pool 18, have had much difficulty lately in making a market and many mines producing these coals are running short of orders. The car supply has been fairly good and it is believed that the average in this respect can be figured close between 65 per cent. and 70 per cent. It is quite noticeable that the plants throughout this district are accumulating heavy supplies of fuel, and some in the trade are inclined to believe that half the battle against a fuel shortage has already been won. The southern coals, especially those from the Fairmont region, display a great show of strength despite the embargo at Baltimore which has hampered that region for three weeks. The shippers there have been enabled to get enough special permits, it would seem, to let sufficient coal through to tide, so that they have been fairly well able to maintain their prices, and the expected break on this coal has so far failed to show up.

The prices per net ton prevailing in this market are approximately as follows:

Georges Creek Big Vein.....	\$3.15@3.25
South Fork Miller Vein.....	3.15@3.25
Clearfield (ordinary).....	2.80@2.90
Somerset (ordinary).....	2.75@2.85
Fairmont lump.....	3.20@3.30
Fairmont mine-run.....	3.00@3.10
Fairmont slack.....	2.50@2.60
Fairmont lump (ordinary).....	2.95@3.00
Fairmont mine-run (ordinary).....	2.70@2.80
Fairmont slack (ordinary).....	2.50@2.65

BALTIMORE

Big export movement continues to jam tidewater terminals and rigid embargo is enforced. September looks like record-breaker. Prices held up despite oversupply at tide. Anthracite trade dull.

Bituminous—At the present time there is a race on between an exceptional export movement and the facilities at tide. The tremendous number of orders, backed by a liberal movement from mines to piers during three of four weeks, seem for the moment to have over-topped the situation. This is the more patent because, while a vast amount of coal is being dumped into waiting ships from the two piers at Curtis Bay and the one at Canton, the class of slow-trimming ships allocated to the port is making rapid loading impossible in some cases. The result on some days last week was that every track at Curtis Bay was filled with waiting loads, every track at Canton was in use and overflows were noted at the yards of the Western Maryland near the recently burned Port Covington pier. In addition many loaded cars were reported waiting on sidings on the Baltimore & Ohio and Pennsylvania between this point and the mines. The piers managed to load on foreign-bound coal carriers a total of 85,652 tons for the week, and for the first two weeks of September the dumping on foreign account here has reached the total of 151,637 tons. If kept up this will mean that the month will be the banner one in the entire history of the coal trade here.

Rigid embargoes against all movement except to ships actually here for loading are enforced at present in an effort to lighten the congestion. Prices remain steady, a shortage of cars at the mines for loading because of the many loads now standing awheel stiffening the producers to take anything but top offerings. For steam coals the best grades are pretty well cleared out, as they kept running while other classes of fuel piled up and caused the general jam. On this business offering for anything like prompt delivery the quotation is generally around \$3.50, although some in the trade report purchasing in the mines at a little less. Intermediate steam grades run all the way from \$2.95 to \$3.10, and some less desirable at \$2.75. The lowest mixed pools are around \$2.40. Gas coals are in heavy call on export, and it is noted that several big English buyers are here in efforts to get coal for delivery to Italy and France to take the place of Welsh coals that are held in check by the British Government's restrictions on exports. Low sulphur three-quarter is holding to the trade at the mines around \$3.50; medium sulphur at \$2.75 to \$3.00 and run-of-mine at \$2.40, or possibly \$2.35.

Anthracite—The market for hard coal is more or less listless, only a part of the

trade urging customers to buy before Oct. 1, when many are figuring there is to be an advance. September ordering is light, as is the usual case here, and there has been a cut down in the proportion of coal bought at 75 cents or more premium because of necessity to round out orders on the book at once. The company run of coal is also reported stronger, although considerably more of stove size could be handled with satisfaction here.

Lake Markets

PITTSBURGH

Car shortage continues. Strike threat did not decrease coal demand in steel industry. No opinion on miners' demands.

The Pittsburgh coal district is hampered in its production by car shortage as much as formerly, and the situation is made the more distressing by the possibility looming large of there being labor troubles in the not distant future. Shipments are at about 60 per cent. of capacity, while there is labor supply for a 75 per cent. production, possibly more.

Operators of the district continue in their attitude of refusing to express any opinions as to the demands being formulated by the annual convention of the United Mine Workers at Cleveland. It is obvious, however, that the demands as a whole promise to be far beyond the limits of possible acceptance, and it may be inferred that whether they say so or not the miners are definitely committed to a policy of pushing the subject of nationalization, an issue which it is beginning to appear would be supported by a few members of Congress.

Lake shipments continue to decrease, but the line trade is no better supplied than formerly and a great many coal consumers would be glad to secure much more coal than they are receiving. While the steel manufacturers have been threatened more and more pointedly with a strike, they have evinced no disposition to curtail their coal supplies but rather have been taking all the coal they could get.

While occasional forced purchases of small lots of spot coal are made at above the general market, the following quotations remain fairly representative of the market as a whole: Steam coal: Slack, \$2.10@2.30; mine-run, \$2.50@2.60; Gas: Slack, \$2.20@2.40; mine-run, \$2.50@2.70; prepared sizes, \$2.60@2.80, per net ton at mine, Pittsburgh district.

BUFFALO

Bituminous not so active. Consumers hold off, as if they were getting heavy stocks. Car shortage not quite so bad. Prices quite unbalanced. Anthracite very scarce.

Bituminous—The market is quiet. Jobbers find it hard to keep up their tonnage, for some reason which they hardly understand. If the consumers were getting more stock than they care to hold it might be explained in that way, but there is no report to that effect. The chances are that the many strikes are having a bad effect on the business outlook, so that manufacturers are afraid to go ahead freely. Such would naturally be the result.

One of the worst features of the trade is that the prices are so out of line. Some of the local shippers report one price and others another. Even the best-posted of them say that quotations seldom meant so little as they do now. All that can be depended on is the order from the consumer, then if the coal can be bought at a profit to the jobber it is ordered. For the most part there is an operator somewhere who will sell at living prices. This makes a very unsettled market, but it is the best to be had now.

The car shortage is expected to regulate the prices almost any time, but just now it is hardly so bad as it was a week ago. The same is true in the grain and flour trade, but it is felt that the lull is a matter of a few days, after which the scarcity will return, perhaps worse than ever before. As it is, the filling of orders at the mines is a slow matter.

Bituminous prices cannot be said to have changed much of late in this market, but the range of them is at least 50 cents, with slack now rather firmer than sizes. Quotations: \$4.45 for Allegheny Valley sizes, \$4.80 for Pittsburgh and No. 8 lump, \$4.65 for same three-quarter, \$4.20 for mine run, \$4.10 for all slack, \$4.60 for smokeless, \$5.70 for Pennsylvania smithing, all per net ton f.o.b. Buffalo.

Anthracite—The situation is anything but pleasant or promising. The miners' strikes cut this market pretty nearly out of the local supply. It is felt that the lake movement must be kept up anyhow, and this is being done as well as possible. The latest report from city distributors is that they have a little chestnut on hand, but are not sure they will get any more right away. Consumers are uneasy, but there is nothing they can do. Canadian retailers are over here in unusual numbers, all clamoring for coal.

The local prices of anthracite remain as follows:

	F.o.b. Cars, Gross Ton	At Curb, Net Ton
Grate.....	\$8.55	\$10.20
Egg.....	8.80	10.65
Stove.....	9.00	10.85
Chestnut.....	9.10	10.95
Pea.....	7.45	9.30
Buckwheat.....	5.70	7.75

Shipments by lake are a little less liberal this week, but the falling off may be merely accidental. The ending of the strike at Duluth and Superior means that the movement will be more free soon. The loading for the week was 92,200 net tons, of which 35,000 tons cleared for Chicago, 16,600 tons for Milwaukee, 3000 tons for Racine, 3400 tons for Manitowoc, 3000 tons for Green Bay, 15,700 tons for Waukegan, 9000 tons for Superior, 6500 tons for Port Arthur.

Freight rates are fairly strong at 60 cents to Chicago, 57½ cents to Racine, 47½ cents to Milwaukee, Manitowoc, Waukegan, 42½ cents to Superior, Port Arthur and Green Bay.

CLEVELAND

Spot requirements of bituminous coal consumers are just about being met. Attempts to stock are proving fruitless. Pocahontas and anthracite grades are even scarcer than they have been. The lake bituminous trade now is only about 40 per cent. of normal.

Bituminous—Car supply continues to be the dominating factor in the local coal market. Some operators say the situation has been somewhat improved in the last few days, and that their mines have been able to ship possibly 10 per cent. more coal. Other operators cannot see any betterment at all. Nevertheless, it is apparent that receipts of bituminous coal in northern Ohio has increased between 5 and 10 per cent. in the past week. Even so, steam-coal users are getting no more than they are consuming, and stockpiles are few and small.

Despite the widely circulated talk of a strike in the iron and steel industry, the belief is generally held in the industry that the tieup, if any, will not last more than a few days. Since the industry takes probably 65 per cent. of the steam-coal coming into northern Ohio, a protracted strike would cut heavily into the market. Iron and steel works continue to take all of the steam coal they can get for their stockpiles are unusually small for this time of the year.

Prices of steam coal continue unchanged, but domestic bituminous is constantly on the upgrade. Due to the strike in the anthracite fields, this grade has become practically unobtainable in the past few days. An already unsatisfied demand for Pocahontas has thereby been augmented, and even domestic bituminous is feeling the effects. This is a great surprise to dealers, who anticipated an exceptionally light domestic demand for bituminous coal this winter on account of the unfortunate experience of householders with bituminous during the war.

The labor situation at the mines continues to "boil," and mine workers' efficiency is sadly impaired. Operators here do not hope for any improvement in this direction until wage-scale negotiations are concluded. They continue in their declaration that there will be no strike, and believe the President's industrial conference at Washington early in October will point the way both for the operators and the mine workers.

Lake Trade—The strike of coal dock workers at the head of the Great Lakes has finally been settled, the men getting wage advances of about 11 per cent. and work has been resumed. A total of five weeks' time was lost by the strike, and some 200,000 tons of bituminous coal have been held in storage by lake carriers, awaiting a settlement. Shipments last week totalled about 550,000 tons. August shipments of bituminous coal amounted to 2,700,000 tons, compared with 4,800,000 in

August, 1918. To Sept. 1, including vessel fuel, Lake Erie coal docks have loaded 16,174,276 tons of bituminous, against 16,866,606 for last season to Sept. 1.

Prices of coal per net ton delivered in Cleveland are

Anthracite:	
Egg.....	\$11.75@11.90
Chestnut.....	12.00@12.20
Grate.....	11.75@11.90
Stove.....	11.90@12.10
Pocahontas:	
Forked.....	9.50@10.00
Lump.....	8.75@9.00
Mine-run.....	7.50
Domestic bituminous:	
West Virginia splint.....	8.00@8.25
No. 8 Pittsburgh.....	6.60@6.90
Massillon lump.....	7.70@7.95
Cannel lump.....	7.85
Coshocton lump.....	6.85
Steam coal:	
No. 6 slack.....	4.60@4.86
No. 8 slack.....	5.10@5.50
Youngbushen slack.....	5.25@5.50
No. 8 1-in.....	5.70@6.00
No. 6 mine-run.....	4.75@5.00
No. 8 mine-run.....	5.20@5.45

DETROIT

With inquiries suggesting a somewhat larger interest among consumers, sales of steam coal show little improvement in volume.

Bituminous—Despite the warnings of coal men and various developments of a nature to encourage prompt action, quite a number of the Detroit buyers of steam coal are still holding back, while others appear to be purchasing on a hand-to-mouth basis, taking only enough stock to satisfy current needs.

The convention of bituminous coal miners in Cleveland, a few days ago, and the program they unfolded, appear to have suggested to some of the local buyers that a little closer interest in the market might be desirable. Jobbers and wholesalers find a small increase in the number of inquiries, which is not yet accompanied, however, by any substantial growth in business.

Meanwhile the car-supply situation seems to be developing increasing importance as a factor in the market, and reports of scarcity of cars are coming to the jobbers with considerable regularity from the mining fields of West Virginia and Ohio. These reports are accepted as indicating the probability of a more troublesome deficiency in transportation facilities as soon as weather conditions become wintry.

There is little or no smokeless coal to be had at present owing to the heavy demands from eastern markets and from the export trade. Small quantities of mine-run are offered occasionally at \$2.75 to \$3. Hocking domestic lump is selling at \$3.25 to \$3.50 a net ton at the mines, and egg size coal brings about \$3. Mine-run holds around \$2.25 to \$2.40 and slack brings from \$1.90 to \$2. Four-inch West Virginia lump of good quality is held at \$4 and two-inch lump brings \$3.75. Mine-run is offered at \$3 and slack is selling at \$2.25 to \$2.50.

Anthracite—With only scanty supplies in stock, retailers are complaining they experience considerable difficulty and delay in getting anthracite. Orders are not being filled promptly, they say, and movement of the coal from the mines to Detroit is slow. Bituminous or some other fuel probably will have to be substituted in many homes during the coming winter.

Lake Trade—Unloading docks at the head of Lake Superior, after having been handicapped by a five weeks' strike, are again working full crews and shippers are again loading cargoes for delivery there. It is expected the last of the carriers waiting—some of which have held cargoes five weeks or longer—will be unloaded this week.

COLUMBUS

The keen edge of a few weeks ago is lacking in the Columbus market, but still there is no apparent dullness. Prices are firm all along the line, and no grade is a drag on the market. Production is increasing under the influence of a better car supply.

A slight easing of the market as far as steam and domestic demand is concerned is apparent during the past week. Buying is not as active as formerly, due in a large part to some accumulated stocks in the hands of dealers and steam consumers. This condition is expected to be temporary only, as there is still a strong potential

demand in the country. Retailers have stocks up to a certain extent and the same is true of large steam users. But with a steady consumption, it is believed that buying will soon again reach an active stage.

Retail trade is going along steadily, with householders buying rather actively. A large majority of the orders placed before Sept. 1 for delivery after that date are now taken care of and current business is what is attracting the attention of dealers. This is not as active as it might be. There is a strong demand for the fancy grades, with Pocahontas lump especially scarce. West Virginia grades are also not plentiful. Prices for retail grades are firm at the levels which prevailed for several weeks. Pocahontas lump sells at \$8, West Virginia splints at \$7 and \$7.25, and Hocking lump from \$5.75 to \$6.75.

Lake trade is still active, despite the dock strike in the upper lake region. There is some congestion on the upper lake docks due to slow interior movement. The car supply, being improved, a larger tonnage has been moved during the past week. Indications point to a continuation of the good lake movement up to Nov. 1 at least.

The steam trade is rather quiet, although some slack and mine-run is moving. Steam plants have accumulated some supplies and are not worrying about the future. Rubber plants are now fairly well supplied. General manufacturing concerns are in the market and the smaller consumers are the best purchasers at this time. Railroads are taking a larger tonnage and that is providing a market for mine-run. The slight flurry caused in the market by the threats of a railroad strike has now passed away. Steam prices are holding firm all along the line.

Production is better in all Ohio fields. In the eastern Ohio district the output is now about 55 per cent. The Hocking Valley reports about 65 per cent, and the same figures are reported from Pomeroy Bend, Crooksville and Massillon have an output approaching 60 per cent, of the average.

Prices at the mines for grades sold in the Columbus market are as follows per ton:

Hocking lump.....	\$3.50
Hocking mine-run.....	2.50
Hocking screenings.....	2.10
Pomeroy lump.....	3.75
Pomeroy mine-run.....	2.75
Pomeroy screenings.....	2.25
West Virginia splints, lump.....	4.75
West Virginia splints, mine run.....	4.25
West Virginia splints screenings.....	3.25

CINCINNATI

Car shortage interferes with delivery of necessary coal. Plans under way to relieve transportation situation.

Operators of coal mines located along the Louisville & Nashville R. R. met in Cincinnati last week to discuss possible ways and means of relieving the present car shortage, which is rapidly becoming serious. If conditions are not corrected, it was said, there is likelihood of a few if not many of Cincinnati's industries and factories being closed down during the coming winter through lack of fuel. Railroad officials also met in conference and discussed plans for correcting, or at least ameliorating, present conditions, which were admitted to be bad. Both of the meetings were executive.

Heads of industries and plants throughout the Ohio and Miami Valleys are complaining that their contracts for fuel are not being filled. Operators say that the railroads are furnishing only 55 to 60 per cent. car supply, and that the delivery of coal on their contracts absolutely depends upon the transportation facilities furnished. For this reason they are compelled to pro-rate deliveries on their contracts, and they are doing all they possibly can on the present basis of cars supplied by the railroads under government operation.

Railroad officials decline to submit to interviews and H. A. Worcester, Federal Director of the Ohio-Indiana district, is absent from Cincinnati. It was learned, however, from official sources, that operating officials assert that much of the blame for the present large number of cars requiring repairs is due to the changes in the shops dictated by the present Railroad Administration under Government operation. Under the old plan, when the railroads were operated under Private ownership, shop workers received 65 and 70 cents an hour on piecework and worked 10 and 11 hours a day.

Operators contend that much of the labor trouble at the mines is due to the car shortage and the consequent reduction of

working hours at the mines. Railroad officials insist, on the other hand, that much of the present coal shortage is due to labor troubles among the miners and that the coal men are placing the blame on an insufficient supply of cars.

Consumers are also vitally interested, for the reason that any real fuel shortage resulting from either labor troubles or scarcity of cars will inevitably mean higher prices for coal this winter, and both directly or indirectly increase the present high cost of living when reductions are being promised.

In addition to these conditions, which are more or less general throughout the country, operators say that railroads feeding the Kentucky and West Virginia fields, particularly the Chesapeake & Ohio and the Louisville & Nashville, are being discriminated against in the matter of cars. In support of this contention we point to the weekly reports of the Geological Survey in Washington, which show car shortages as high as 40 per cent. in fields supplying Cincinnati and this section, when car shortages in other sections are only 15 per cent., 10 per cent. and even less.

Several plans submitted for the purpose of relieving these conditions were considered at the meeting of the operators, which were presided over by E. L. Douglas, president of the Hazard Operators' Exchange. It is probable that further action will be decided on at a conference to be held soon.

LOUISVILLE

Slightly better car supply with operations climbing up to three days a week. Good demand from large industrial consumers. Block coal in good demand. Retail demand a little dull.

Some improvement in routing cars to the Kentucky coal fields has been noticed, and mines that for weeks have been working two days a week are now operating three, with indications that they will all be operating on that basis shortly. Reduction of cars moving into the South and being routed back to pool territory has helped somewhat.

There is an excellent demand from industrial consumers of the larger type for coal, big men realizing that coal will be scarce and high, and trying to get under cover. Utility companies, gas, byproduct and similar concerns are the largest buyers, while railroads, too, are buying coal. Some steam coal is still going to the Northwest.

Retailers are taking all the block coal they can secure, but production is still low and old orders and contracts are taking up all supplies, with little coal available on new business. Efforts of Harlan operators to hold down prices have not helped much, although a number of companies are selling no coal at more than \$4 a ton. Retailers report a full demand due to hot weather, but are stocking somewhat more freely.

Quotations on Kentucky coals are as follows:

	Eastern Kentucky	Western Kentucky
Block.....	\$4.50@5.25	\$2.60@3.25
Run-of-mine.....	3.00@3.50	2.35@2.60
Nut and slack.....	2.50@2.75	1.90@2.05
Fine screenings.....		1.15@1.75

BIRMINGHAM

Scarcity of high-grade steam coal has increased the demand for lower grades. Domestic inquiry unusually strong, with no supply available. Car supply around 55 per cent. of requirements.

A slightly better market has developed for medium and lower grades of steam fuel the past week, due to the tonnage from mines producing the best grades of steam coal being so restricted by car shortage as to be unable to supply the requirements of the trade. As a whole, there has been little, if any, improvement in market conditions. Considerable inquiry for bunker and export business is being received by local brokers and agents, but nothing out of the ordinary has developed as yet along this line. Quotations are unchanged and are as follows on steam coal per net ton mines: Big Seam, \$2.30@2.60; Corona, \$2.85@3.00; Pratt, \$2.85@3.00; Black Creek and Canaba, \$3.45@3.86.

Domestic mines have declined to book further orders for the present, having all the business in hand that they can expect to handle under the adverse operating conditions now prevailing, therefore deliveries on contracts constitutes about all the coal that is moving for domestic use.

The Southern started off the week with about a 35 or 40 per cent. car supply and

the Louisville & Nashville about 50 per cent. of the equipment needed. The average for the past week was probably 55 or 60 per cent. The output for the week ending Sept. 6, as reported to the Alabama Coal Operators Association, was 249,071 net tons, the mines making the returns claiming a loss of 550 hours due to lack of equipment.

Coke

CONNELLSVILLE

Furnace coke fluctuates. Foundry very strong. Threatened strike in iron and steel industry has not visibly affected market.

The furnace-coke market has had its ups and downs from day to day, being affected by the appearance and disappearance alternately of small accumulations of coke loaded on track and awaiting shipping instructions. Several accumulations have been quickly absorbed by consumers whose contract deliveries were short, and as high as \$5 has had to be paid, though there are reports of \$4.75 and possible a shade less having been done within the past ten days.

The coke situation has been complicated by the threatened strike in the iron and steel industry. While the organizing committee of the 24 unions that has been seeking for several months to organize the entire iron and steel industry desired to organize the coke workers and ore miners just as much as the workers at the furnaces and in the mills, it does not appear that they had any considerable success in the Connellsville coke region. Thus on theory there was a possibility of coke becoming quite plentiful through blast-furnace operations being affected by a strike and coke production not being affected. This did not influence furnaces, however, and there has been the same demand as formerly. At this writing it cannot be told whether there will be a strike, or if there is, how extensive it will be.

The demand for foundry coke has continued relatively heavy, with offerings light, and the market is even firmer, at the advanced levels quoted a week ago. Very ordinary foundry coke brings \$6.25 if loaded in box cars, and there is nothing being done at less than \$6, while favorite brands readily bring \$6.50, even when loaded in hopper cars. We quote the spot and prompt market at \$4.75@5 for furnace and \$6@6.50 for foundry, per net ton at ovens.

The "Courier" reports production in the Connellsville and Lower Connellsville region in the week ended Sept. 13 at 259,900 tons, a decrease of 3842 tons.

Buffalo—The demand is not heavy and it is not likely to improve till it is known what is to be the result of agitation in the steel industry. The movement of iron ore by lake continues good and is not quite up to normal, so that the time lost in the short strike is likely to be fully made up. Quotations are firm at \$7.60 for 72-hour foundry, \$7.25 for 48-hour furnace and \$7 for off grades, with domestic sizes \$6.75, and breeze, \$5.75, all per net ton, f.o.b. Buffalo.

Middle West

MILWAUKEE

Coal trade conditions quiet. Stove and nut anthracite scarce. Total receipts of all kinds of coal a little behind last year.

The coal market is pursuing an even tenor, with no apparent concern on the part of consumers as to price or adequacy of supplies on the docks. Dealers report a steady demand both from city and country. A shortage in stove and nut anthracite makes it hard to meet orders from small consumers with magazine heaters. Prices of coal and coke hold steady. Shippers complain of a lack of cars. This condition is apt to be accentuated as the grain movement increases. Cargoes by lake continue to arrive daily. Thus far two cargoes which had been consigned to Duluth found their way to the docks here because of the dock strike at the head of the lakes. Receipts for the season by lake, including the first half of September, aggregate 600,940 tons of anthracite and 2,194,671 tons of soft coal, a gain of 164,064 tons of the former and a loss of 222,342 tons of the latter in comparison with last year's receipts during the same period.

ST. LOUIS

Continued quiet and somewhat inactive market locally. Country demand good, except on screenings. Tonnage unusually small and strike still in progress in the Standard and Mt. Olive fields. Car supply poor, with promise of betterment.

Conditions in the St. Louis market are different from those of other years at this time. There is little demand for coal other than Cartersville. The principal call for both steam and domestic coal comes from the country districts. The local industrial situation is rather light and many plants are running only part of the time.

With about two-thirds of the mines in the Standard districts working, there is an oversupply of screenings and within the next few days some mines are going to be idle on account of their failure to move this size. On account of Standard selling at a price equal to, or higher than, Mt. Olive, there is a call for Mt. Olive locally and little demand for Standard. The Mt. Olive operators are still holding their coal in the local market at from \$2.40@2.55 for domestic sizes, with the exception of washed, which is going at \$2.80@3.

The Standard market locally for 2-in. lump is \$2.50@2.60. Out of town this coal is selling at as high as \$2.75. Standard 6-in. lump is from \$2.75@3, and the same applies to 3x6 egg and No. 1 nut, with little to offer and an outside market that will absorb all that is produced.

There are several mines in the Standard field still idle on account of the strike. The miners at No. 17, of the Consolidated Coal Co., at Collinsville, tried to work the early part of the week. Insurgents aided by several of the women prevented them from going out by throwing stones, and a general fight almost resulted. The day following about ten detectives were on the mine train, and as soon as the miners found that they were guarded they quit the train, so that the mine was idle again. In other places only a few of the mine workers are back.

In the Mt. Olive district the trouble is dying out, and conditions ought to be normal within the next week or ten days unless something unexpected turns up.

The supply of cars in the Standard field shows some improvement, even on the Illinois Central. In the Mt. Olive field conditions are almost normal with a fairly good car supply. In the Cartersville field of Williamson and Franklin Counties the principal trouble is car supply. There has been a let-up in the railroad demand on the Iron Mountain in the past week, since its source of supply on contracts, which is in the Standard field, is resuming operations. There continues, however, to be a demand about three times as great as the supply for coal from this field. At a few mines there has been an easing up on screenings, but on everything else the mines are sold up anywhere from one month to three months.

Labor conditions are good right now and the movement of cars shows some improvement. The only great trouble is car shortage. The same situation applies to the Du Quoin field. The prices are generally maintained throughout the field, although there is a difference of from 10c. to 15c. in the so-called circular.

The prevailing prices per net ton, care mines, are as follows:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump...	\$3.15@3.30	\$2.40@2.55	\$2.75@3.00
3x6 egg.....	3.15@3.30	2.40@2.55	2.75@3.00
2x3 nut.....	3.15@3.30	2.40@2.55	2.75@3.00
1x2 nut.....	3.15@3.30		
Minerun.....	2.40@2.50	2.25@2.35	2.00@2.20
Screenings...	2.10@2.25	2.05	2.00
2x6 egg.....			
2-in. lump...			2.50@2.60

Williamson-Franklin County rate to St. Louis is \$1.07; other rates \$0.92.

P & R Ry.....	1,142,713
L. V. R.R.....	1,171,026
C. R. R. of N. J. .	560,331
D. L. & W. R.R..	936,212
D. & H. Co.....	716,333
Penna. R.R.....	438,214
Erie R.R.....	678,437
N. Y. O. & W. Ry..	182,450
L. & N. E. R.R..	318,428
Total.....	6,144,144

The domestic prices range, f.o.b. the mine, from \$3.15@3.30 on lump, egg and on the screened nut sizes. Screenings are going out from \$2.10@2.25, with mine run at from \$2.40@2.50.

In St. Louis proper a little anthracite moved in the past week and a few cars of smokeless, with no Arkansas. The local demand for coke shows improvement, but the outside demand can hardly be taken care of.

Recent Coal Patents

Gathering mechanism for coal loading machines. J. F. Joy, Belle Vernon, Penn., 1,306,620. April 15, 1919. Filed Aug. 23, 1917. Serial No. 187,805.

Fuel economizer. E. B. Overshiner, Chicago, Ill., 1,301,000. April 15, 1919. Filed Oct. 11, 1918. Serial No. 257,679.

Mine cage hoist. T. Price, Nanaimo, British Columbia, Can., 1,300,647. April 15, 1919. Filed Jan. 15, 1918. Serial No. 271,266.

Tool for miners' and blasters' use. E. Godfrey, assignor to Canadian Explosives, Ltd., Montreal, Can., 1,300,834. April 15, 1919. Filed June 26, 1918. Serial No. 241,942.

Car hoisting and dumping apparatus. A. H. Wood, assignor to Wood Equipment Co., a corporation of Illinois, 1,301,208. April 22, 1919. Filed Sept. 23, 1916. Serial No. 121,809.

Ash Conveying System. A. P. Strong, assignor to Green Engineering Co., E. Chicago, Ind., 1,301,194. April 22, 1919. Filed Sept. 23, 1916. Serial No. 121,809.

Coal receiving and storing plant. C. S. Wilkinson, Chicago, Ill., 1,301,630. April 22, 1919. Filed Oct. 6, 1916. Serial No. 124,046.

Safety device for mines. J. A. Nolan assignor to Mining Safety Device Co., Bowerston, O., 1,301,732. April 22, 1919. Filed June 28, 1916. Serial No. 106,451.

Smoke consuming furnace. Oscar Lox, Chicago, Ill., 1,302,061. April 29, 1919. Filed Oct. 28, 1914. Serial No. 869,003.

Hand stoker. G. H. Thacher assignor to Files Engineering Co., a corporation of Rhode Island, 1,302,453. April 29, 1919. Filed Sept. 15, 1917. Serial No. 191,578.

Furnace grate. P. Scherman, Fort Atkinson, Wis., 1,303,119. May 6, 1919. Filed Dec. 17, 1915. Serial No. 67,375.

Roller cleaning apparatus. H. J. Lund, Skien, Norway, 1,302,940. May 6, 1919. Filed Nov. 21, 1916. Serial No. 132,601.

Mining apparatus. W. E. Hamilton assignor to Jeffrey Mfg. Co., Columbus, Ohio, 1,303,303. May 13, 1919. Filed Aug. 30, 1909. Serial No. 515,341.

Coal charging lorry. L. Wilhutte, New Rochelle, N. Y., 1,303,526. May 13, 1919. Filed Sept. 1, 1916. Serial No. 117,980.

General Statistics

ANTHRACITE SHIPMENTS FOR AUGUST, 1919

The production of anthracite continues to increase, according to reports of shipments made to the Anthracite Bureau of Information at Philadelphia. The shipments for August amounted to 6,144,144 gross tons, as compared with 6,052,334 tons in July, which in turn had the record for largest shipments since October, 1918. Compared with August, 1916, the latest normal year in the anthracite trade, the shipments last month showed an increase of a little over 600,000 tons, or about 11 per cent. For the first five months of this coal year the shipments have amounted to 28,752,699 tons, as compared with 26,678,333 tons for the corresponding period of 1916, an increase of 2,074,366 tons.

The shipments by railroad were as follows:

	August, 1919	August, 1916	Coal Year, 1919-1920	Coal Year, 1916-1917
August, 1919	1,142,713	1,000,667	5,559,110	4,904,976
August, 1916	1,171,026	1,026,074	5,220,226	4,865,344
Coal Year, 1919-1920	560,331	541,156	2,593,506	2,633,831
Coal Year, 1916-1917	936,212	875,131	4,619,134	4,063,406
Coal Year, 1919-1920	716,333	572,822	3,380,415	3,007,146
Coal Year, 1916-1917	438,214	482,416	2,029,557	2,265,283
Coal Year, 1919-1920	678,437	658,044	3,161,576	3,182,216
Coal Year, 1916-1917	182,450	184,708	838,560	814,272
Coal Year, 1919-1920	318,428	190,779	1,350,615	941,859
Total	6,144,144	5,531,797	28,752,699	26,678,333